

HOME NEWS

Sea oil likely to lift U.K. productivity

BY DAVID FREUD

PRODUCTIVITY of the U.K. economy is likely to grow 3.5 per cent this year and 3 per cent next year, according to a study by City stockbrokers Wood, Mackenzie.

The firm says, although these might seem high growth rates in comparison with those of recent years, if the effect of North Sea oil is excluded they indicate a performance slightly worse than that achieved in the pre-1973 period.

Nevertheless, the increase in productivity, the expected sharp rise in the labour force, and the likelihood of growth rates restricted to about 3 per cent a year might bring U.K. unemployment up to 15m by mid-1979, compared with the present 14m.

The main reasons for the expected improvement in productivity are:

- A rise in output which will enable plants to be used more efficiently.
- North Sea oil, which is forecast to contribute nearly 1 per cent to GDP both this year and next year without adding to employment.
- A slowdown in the growth of employment in unproductive services.
- Measures being taken to increase capacity and over-manning in key industries such as steel and vehicles.

Because the extra income from North Sea oil does not involve any additional employment, the boost to productivity is equivalent to the addition to GDP of nearly 1 per cent.

The manufacturing sector's productivity is expected to grow per cent both this year and next year, in line with increased oil is excluded they indicate a performance slightly worse than that achieved in the pre-1973 period.

The firm believes present forecasts of manufacturing production growth of 2.5 per cent are unduly pessimistic.

It points out that there will be some opportunity for U.K. producers to win back some market share from imports, for example in textiles where the EEC have introduced quotas and vehicles where there should be some overcapacity in labour relations.

A rise in world trade and a more competitive exchange rate should mean some improvement in export performance next year.

Productivity in the service sector is expected to grow about 2 per cent a year in the next two years, mainly because of the fall in unemployment.

The 2 per cent figure compares with 1.5 per cent average growth each year between 1970 and 1973 and a 2.5 per cent productivity slump between 1973 and last year.

Chamber opposes Liberal scheme

BY OUR ECONOMICS STAFF

BUSINESS would prefer high levels of direct tax cuts to be financed by increases in Value Added Tax and other indirect taxes such as petrol duty where necessary, according to the latest economic report from the London Chamber of Commerce and Industry.

The report, published this morning, says the Liberal Party's proposals to achieve this by further increases in the employers' national insurance contribution is strongly opposed.

The Chamber predicts that the overall stimulus will be about £2bn. in tax cuts and that concern about the retail price index will discourage any great use of indirect taxes to finance larger cuts in direct tax.

The danger of inflation boosting imports must be recognised but the need to provide incentives is of equal urgency, the report says.

In a separate note the London Chamber has written to the Chancellor calling for a further relaxation in exchange controls. In particular it wants the abolition of the control which curtails the use of sterling in third country trading.

LABOUR NEWS

Lorry drivers postpone strike over allowance

BY PHILIP BASSETT, LABOUR STAFF

STRIKES BY lorry drivers at nearly 2,000 haulage companies in London and the south-east, due to begin yesterday have been postponed until the drivers' shop stewards have had a reply to their request for official backing.

Intervention by the Advisory, Conciliation and Arbitration Service has failed to solve a pay dispute at the heart of the London drivers' problem.

The drivers' stewards voted last month to recommend strike action over the pay claim, but suspended any action until yesterday so that the dispute could be referred to ACAS.

Senior officials of the Transport and General Workers' Union, the drivers' union, have said that because the dispute arose from a breach of an agreement official backing for a strike was likely.

Stewards are likely to meet this week, after they receive the reply from union headquarters, to decide how the strike action is to hit haulage companies.

The dispute is about a 25p daily meal allowance originally included in a Road Haulage Association pay package. The 25p allowance was dropped from the deal after pressure from other regions.

London stewards rejected a replacement offer of a 35p-a-week meal element, and decided to recommend a strike in support of the claim.

After the dispute was referred to Advisory, Conciliation and Arbitration Service, the union decided to accept the package with no meal allowance, provided that the allowance went to arbitration. The Road Haulage Association did not agree to this and the stewards then applied for official strike backing.

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Midland Bank plans agreement with rival unions

BY NICK GARNETT, LABOUR STAFF

MIDLAND BANK still hopes eventually to sign a joint procedure agreement and has since offered both unions the same but separate arrangements. However, the decision by the National Union of Bank Employees and the Association of Scientific, Technical and Managerial Staffs, despite the strained relations between the two unions, to have taken a slightly softer line on the possibility of re-opening joint talks with ASTMS. The Midland retorted by announcing the scrapping of NUBE's 1970 initiative later this year.

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TUC rejects pensions for everyone at 63

BY OUR LABOUR STAFF

THE TUC has rejected a suggestion by the Equal Opportunities Commission that a common retirement age of 63 should be introduced for men and women.

A recent consultative document by the commission, *Equalising the Pension Age*, made the suggestion as "a feasible proposal to promote discussion."

The TUC said today that the idea was a step back from achieving retirement at 60 on an adequate pension for both men and women, a policy which had the

Make sit-ins official, say stewards

SHOP STEWARDS at two

Rolls-Royce aero-engine factories in Coventry where sit-ins are continuing are to apply to their unions for official recognition of a pay dispute which has caused nearly 6,500 workers to be laid off.

The stewards claim that they are being refused a settlement within pay guidelines.

The company offer is a 9.3 per cent increase, and the dispute is over the timing of the payment of the remaining 0.3 per cent.

Steel union chiefs to discuss closure

BY ROBIN REEVES, WELSH CORRESPONDENT

NEGOTIATIONS on the early closure of the navy-steelmaking end of Ebbw Vale works, with the loss of more than 2,000 jobs, take place this week in South Wales.

The TUC's steel committee, led by Mr. Bill Sims, general secretary of the Iron and Steel Trades Confederation, is to meet local union representatives tomorrow to discuss their conditions for agreeing to shut East Moors, they would prefer to soldier on for the remainder of the plant's allotted life.

Cash limits on public spending 'retrograde'

BY PETER RIDDELL, ECONOMICS CORRESPONDENT

STRONG criticism of the cash limits system of control over public spending as "basically unnecessary and retrograde" comes this morning from Mr. Peter Oppenheimer, the Oxford economist.

Mr. Oppenheimer writes in the April issue of *Stockbrokers' Vickers' da Costa's* regular circular on the British economy that the system was retrograde because it extended the new-found and in itself entirely proper concern of policymakers with nominal variables into an area where it was out of place.

The breakdown of public expenditure control in 1974-75 was a 12-month wonder, said that control was soon restored, with cash limits. These came in only a year later, in April 1976.

The breakdown of 1974-75 would not have been prevented even if cash limits had existed. The shocks to the macro-economic system were simply too great.

Abolition of cash limits was unlikely to be announced in the Budget speech some time ago. It had become an established part of the public spending system.

Cash limits must be used to encourage both saving and spending where they were applied, and a more restrictive fiscal stance than the authorities intended.

The post-Plowden scheme for medium-term planning (the *planning*) was basically sound and did not need supplementing with cash limits.

£2.2bn. boost forecast

THE EXPANSIONARY effect of the Budget is likely to be offset by slow world growth and continued high personal savings, according to City stockbrokers Montagu, Loeb, Stanley, and David Freud.

The firm forecast an expansionary package of about £2.2bn. consisting of £2.2bn. income tax cuts and a £500m. increase in budgeted public expenditure balanced by a £500m. increase in direct taxes.

A package of this size is not expected to have much effect in raising employment, investment or stimulating output by more than a short-term fillip during the middle of this year.

Stockbrokers Sheppards and Chase expect the tax reduction to be rather "frequently canvassed" figure of £2bn. probably in the region of £1.75bn. in the 1978/79 fiscal year, equivalent to £2.5bn. in a full year.

Customers wait and see

CONSUMERS have not been using to beat the Budget this year apart from last-minute weeks, but not a dramatic up to speed up.

Wine merchant Unwins said it expected any tax cuts in the Budget to lead to a rise in consumer spending. But, on the basis of past Budgets, this would not work its way through until June or July.

Week in Parliament

TO-DAY Commons—Motions on National Enterprise Board (financial limit) Order and financial assistance to British Leyland. Motion on EEC documents on farm structures.

WEDNESDAY Commons—Debate on collective bargaining.

THURSDAY Commons—Expenditure, Education, Arts and Home Office sub-committee. Subject: Reduction of Pressure on the Prison System. Witnesses: Magistrates' Association. (4 p.m. Room 13.)

FRIDAY Commons—Overseas Development. Subject: Renegotiation of the Lome Convention. Witnesses: Mr. Frank Judd, MP, Minister of State, FCO. (4.30 p.m. Room 6.)

SATURDAY Commons—Public Accounts. Subject: Appropriation Accounts. Witnesses: Department of Energy, U.K. Atomic Energy Authority. (5 p.m. Room 16.)

SUNDAY Commons—Chancellor of the Exchequer opens his Budget. Opposed private business followed by motion on EEC documents on Community textile policy.

MONDAY Commons—RDS—Export guarantees and Overseas Investment Bill (consolidation measure), second reading. Oaths Bills (consolidation measure), second reading. Scotland Bill, committee stage. Motion to approve housing (homeless persons) appropriate arrangements. Order 1978.

TUESDAY Commons—European Legislation etc. Sub-Committee I. Subject: Electrical and Machine Tool Standards. Safety at Work. Witnesses: Officials of the Department of Employment. Health and Safety Executive. (10.30 a.m. Room 15.)

WEDNESDAY Commons—Continuation of Budget debate. Lords—European Assembly Elections Bill, committee stage. Commons—Private members' Bill.

THURSDAY Commons—Continuation of Budget debate.

FRIDAY Commons—Continuation of Budget debate.

SATURDAY Commons—Continuation of Budget debate.

SUNDAY Commons—Continuation of Budget debate.

MONDAY Commons—Continuation of Budget debate.

TUESDAY Commons—Continuation of Budget debate.

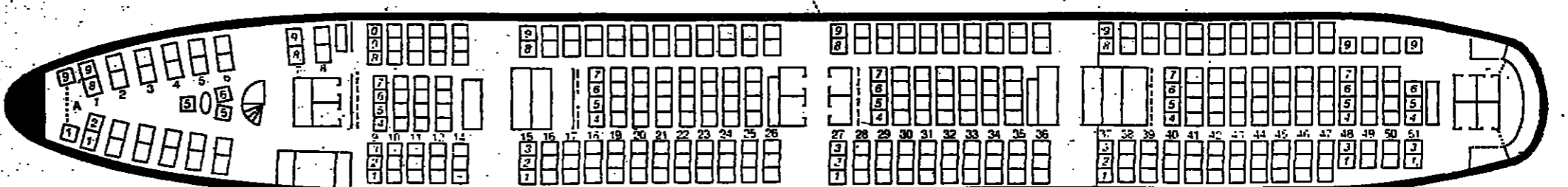
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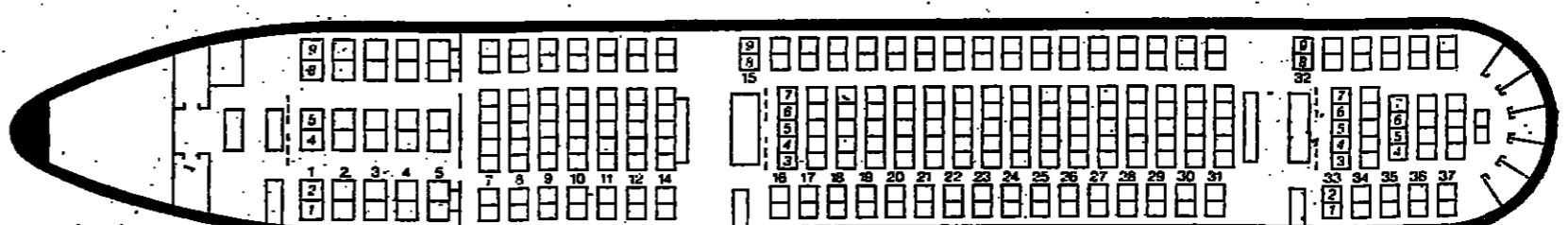
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Gleeson's £6m. at home and abroad

LARGEST OF the £6m. worth of contracts captured by Gleeson companies over the past few days is a Thamesmead award by the GLC worth £2.5m. plus and covering the construction of 159 dwellings.

Next in line is a further award from Ismailia Misr Refrigeration Company for the building of a £1.3m. cold store in Egypt. It will be erected at Ismailia with work to begin in the near future and will be the third such structure to be built by Gleeson in the country.

Back to home construction and a £793,461 contract for 80 flats at Gleadless, Sheffield, to be built for the City of Sheffield. For Greater Manchester, 144 dwellings are to be modernised at Bennett Street, Hyde, at a cost of £561,864.

A cold store complex is constructed for with Gleeson by Woodward Distributors (Selatyn). It is being built at Oswestry at a cost of £800,000 and comes under the control of the company's Scarborough office.

Wessex Water Authority is to make major extensions to its Melksham treatment works and the £900,000 job has gone to Gleeson Civil Engineering which will complete in 18 months.

In Bradford, Gleeson is to build 39 dwellings for a total of £521,000.

Stage I of the National Watstown Reclamation Scheme, in South Wales is another project for which value has been disclosed for work which is for Mid-Glamorgan County Council Reclamation Unit, Cardiff.

£4m. worth for Wimpey

TWO U.K. contracts worth over £3m. and another overseas worth about £1m. have been won by George Wimpey.

Largest of the U.K. awards is for the construction of 194 dwellings at Eastfield Road, Westbury-on-Trym, Bristol. Work is due to start in May. Architects are Leonard Manasseh and Partners.

For Plymouth City Council, Wimpey is to build a 750-pupil comprehensive school. It will consist of seven blocks of traditional construction and will cost about £1.5m.

In Port of Spain, Trinidad, Wimpey is just starting on a film contract from the Government of Trinidad and Tobago for the construction of the Laventille junior school. This is due for completion in July, 1978.

£1.2m. Laing facelift

LAING HAS been awarded two further contracts together worth £1.2m., to modernise 287 dwellings in Phase I of the Manchester City Council's Barlow Moor improvement scheme. The company has already rejuvenated 200 other

homes bringing the total value of work to nearly £2m.

The Council will temporarily rehouse flat residents during the work-in-progress and tenants of houses, where possible, will remain in residence and see their homes transformed around them.

£5m. vehicle testing ground

A VEHICLE proving ground which will be out of sight of the general public is to be constructed for British Leyland Cars at the former RAF station at Gaydon, Warwickshire.

The £5m. contract has gone to Sir Alfred McAlpine and work is now getting under way with completion due in the autumn of 1978.

The 700-acre site will include road test tracks for emission, endurance, performance and braking tests, together with workshops, administration, block maintenance, servicing and track control buildings. Landscaping and screening by trees will be carried out in collaboration with the local authority and Forestry Partners (quantity surveyors).

The aim will be to ensure security and privacy and minimise noise.

The team of consultants appointed by British Leyland include Harry Weedon Partnership (architects), Freeman Fox and Partners (civil, structural, mechanical and electrical engineering) and L. C. Wakeman and Partners (quantity surveyors).



Impression of the new headquarters for Maog Controls to be built by Modern Building Services of Bristol. The contract, worth £500,000, is due for completion in February next year.

wood and plastic. Now, the Steel Window Association is promoting a seminar, "Whatever Happened to the Steel Window?" around the country during 1978.

A recent report shows that steel windows are holding their own—the modern steel window does not rust; galvanising has been mandatory under BS890 for the last 30 years, and since then no single instance of galvanic breakdown has been recorded against a major window manufacturer of the Steel Window Association.

Colour finishing is one of the most recent developments—polyester powder coating promises a 30-year life. Factory finished windows, supplied in more than 100 special colours allow a significant saving on site programme times and can be supplied in a preferred size range or, alternatively, purpose-made sizes within the period to suit most construction projects.

Venture in Victoria

CHANTRY HOUSE, Eccleston Street, London, S.W.1, is to undergo major refurbishment by Bovis Construction under a more than £2.5m. contract awarded by MEPC.

The removal of a combination of load-bearing brick walls and a structural frame will provide modern open-plan office area on five upper floors. A new structural steel frame will prop up

existing floors, load-bearing brickwork will be removed from the 5th floor downwards, and a new structural topping will be given to the existing floor joists and breeze floors.

After a construction programme of 81 weeks (completion should be in September next year) there will also be shells for six shop units at ground and basement levels.

Toughness of concrete increased

ALTHOUGH polypropylene fibres have been used over the past few years to increase the toughness of concrete, there have been disadvantages which have discouraged further exploitation.

However, one of Britain's youngest universities has spent almost a decade on researching the problems and now claims a strong, safe and economic alternative.

Overseas deal

A NEW concrete roof tile plant using Redland machinery and equipment will be built this year in Portugal.

Redland-Braas-Bredero Europa (RBB) BV, based in Holland has signed a manufacturing licence and technical assistance agreement with Argibetao of Portugal.

Argibetao, a subsidiary of the Cimlanto Group, already has two tile plants in Portugal and the new RBB one will be the 17th in Europe covered by an RBB technical assistance agreement.

Processes bulk waste

ONE MAN in a centrally positioned control room will press a button to dispose of up to 325 tonnes per day of domestic and trade waste at High Wycombe, Bucks.

All industrial waste generated in and around the area (estimated to be 80,000 tonnes per annum) will now be processed through an Anchorpak P.55 waste compaction system

on Bucks Council's "High Heavens" new 66-acre disposal complex at Booker.

Waste discharged from vehicles entering the reception building will be engaged by a 30-cubic metre hopper ensuring minimum tipping delay even when containers are being changed, and the new waste compaction system will be able to handle even the most bulky waste items presented.

Work in Wales and Devon

THE SOUTH west office of Holland, Hannen and Cubitts Construction has won contracts in Torquay and Cardiff together worth over £1m.

New printing works and offices will be at Torquay for the Western Times Newspaper Company, and in the same town, Cubitts will build 31 flats in two-storey blocks for Torbay Housing Society. In Cardiff, 25 old people's flats are to be built for the Hanover Housing Association and a showroom provided for Calor Gas.

Project in Alberta

EXTENSIVE building operation could be undertaken as the result of the release of some 13,000 acres of land for development in Alberta.

Genstar (Site Generale Belge) and Atco Industrial have reached an agreement in principle under which Atco will participate in the Alberta Land Development Company to which Genstar is contributing its land holdings, in various areas in Alberta.

Value of the land is put at \$190m. and one of the aims of the company will be to develop it with a view to planning both industrial and residential projects.

Apart from Alcoa, Meranti Bank of Canada and Trans-Canada Bank will participate in the Alberta Land Development Company.

Mobile crane will lift 1,000-ton loads

ONE OF the U.K.'s biggest crane hire and lifting specialists, G. W. Sparrow and Sons of Bath, Somerset, has ordered a 1,000-ton mobile crane from Leo Gottwald of Dusseldorf. Cost of the crane, which will be available for hire both at home and overseas, will be over £2m.

It is claimed to be the biggest crane of its type in the world, offering exceptional lifting capacities at long radii and capable of raising loads up to a height of 300 metres, or well over 600 feet. The crane will lift 1,000 tons on a 29-metre main boom, 500 tons to a height of 58 metres and 200 tons on a 109-metre main boom.

The crane both in the U.K. and overseas, particularly for major construction projects where it would be useful for lifting and placing exactly very large and bulky units from one strategically located position.

Manufacturers of petrochemical plants, for instance, would now be able to consider the production of larger single units off-site for subsequent placement at their ultimate destination in one lift.

Sparrow expects to take delivery of the crane in June next year. In the meantime, the company has purchased a 200-ton Gottwald mobile telescopic crane and this will be shown at the development and in Paris before delivery to Sparrow in June this year. This crane has cost about £500,000.

Good progress on Suez tunnel

TARMAC Overseas and the Arab contractors Osman Ahmed Osman in a fully integrated joint venture going by the name of Osmac are reportedly making good progress on the contract to drive a tunnel beneath the Suez Canal.

Work on the project, which will provide a vital link between the East and West Banks, started on the site in September 1976. The tunnel is located at El Shailuf, which is just north of the town of Suez.

Known as the Ahmed Hamdi tunnel, the project will provide two carriageways in a tunnel which will have a driven length of 14 km and at its deepest point will be 40 metres below the present canal level. It is designed to provide the final link between Cairo, 135km to the West and the East Bank and will form an integral part of Egypt's comprehensive regional plan for the Suez zone, due to be carried out over the next 25 years and involving development of the Suez Canal.

Plans originally drawn up foresaw a series of five tunnels along the canal providing important links with the East Bank, although this has now been revised to three.

The tunnel is due to be operational by 1980 and although the contractors have encountered some substantial problems, in terms of ground conditions, mobilisation and communications, they are pleased with the rate of progress to date.

Since work started, 12m. cubic metres of earth have been excavated in preparing the approaches. A pilot tunnel is now being driven from a 42m. deep shaft to prove the ground beneath the Canal as boreholes could not be put down because of the likelihood of interfering with shipping lanes.

The project was originally costed at about £30m. but this sum is already out of date and a revised budget is now being formulated. The final cost is expected to be very much larger than the earliest estimate.

Major causes for the cost escalation have been the rate of inflation and a number of changes in the layout of the works. The contractors and the client, the Ministry of Housing and Reconstruction, are examining ways of reducing the cost.

Mr. Arthur Gillett of Tarmac International says that work on the approaches to the tunnel is well advanced and the pilot drive is on programme. "We are pleased with progress on what represents the first major Egyptian civil engineering contract involving a U.K. contractor since the country's open door policy took effect in 1973."

"A major problem has been the situation of the tunnel site and the resulting problems of communication, but we hope to see it open for traffic on 1980."

MICHAEL CASSELL

Hunting in Liberia

A PROGRAMME of airborne spectrometer surveying to explore for uranium deposits in Liberia is being carried out by Hunting Geology and Geophysics.

The contract was awarded by a unit of Coastal States Gas Corporation of Houston, Texas.

Hunting is supplying geophysical equipment and personnel for two helicopters operating for four months in Liberia by Western Helicopters of Rialto, California.

IN BRIEF

- Head Wrightson Process Engineering of Thornaby, Cleveland, has been awarded a management and engineering contract for modifications to a water plant by Capper Pass of North Ferriby.
- Three orders worth a total of £180,000 for bulk storage and handling equipment have been given to Aldersley Equipment of Wolverhampton, by Wolverhampton and Dudley Breweries, Smiths Flour Mills at Walsall and Richard Simon and Sons, Nottingham.
- The Contract Journal's 1978 Site Equipment Demonstration at Hatfield (April 18-20) will feature first-time demonstrations of new machinery, the latest high-speed levelling laser beam theodolite and the launching of a new Volvo wheeled loader.
- TI Metsec is supplying £41,000 worth of purins to Redpath Dorman Long for the roof of Leyland Cars new small car body plant at Longbridge, Birmingham. The company is also supplying £17,750 worth of purins for the roof of a Leyland transmission and axle plant, council flats at Becontree, Essex, has been awarded to John
- Frankpile's new brochure describing the company's range of piling and geotechnical services, also lists the products and services of three associated companies Foraky, Ground Anchors and Stewart Ross. Ten different types of pile are detailed and given a chart of geotechnical operations include diaphragm walling, vibrocompaction, Franki-Kjellman drains and field testing.

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8 BLOCK (400 mm) IN LINE, NONSLIP WIRE DRAWING MACHINE in excellent condition 0/200ft./min variable speed 10 hp per block (1968).	0902 42541/2/3 Telex 33644
24" DIAMETER HORIZONTAL BULL BLOCK BY Farmer Norton (1972).	0902 42541/2/3 Telex 33644
ROTARY SWAGING MACHINE BY Farmer Norton (1972).	0902 42541/2/3 Telex 33644
SLITTING LINE 500 mm x 3 mm x 3 ton capacity TWO VARIABLE SPEED FOUR HIGH ROLLING MILLS Ex. 450" wide razor blade strip production.	0902 42541/2/3 Telex 33644
MODERN USED ROLLING MILLS, wire rod and tube drawing plant—roll forming machines—slitting—flattening and cut-to-length lines—cold saws—presses—guillotines, etc.	0902 42541/2/3 Telex 33644
1000 mm x 7 tonne coil fully overhauled and in excellent condition.	0902 42541/2/3 Telex 33644
1945 TREBLE DRAFT GRAVITY WIRE DRAWING machine by Farmer Norton 27" x 27" x 31" diameter drawblock and CUT-TO-LENGTH LINE by R. M. Max capacity 750 mm x 3 mm.	0902 42541/2/3 Telex 33644
6 BLOCK WIRE DRAWING MACHINE equipped with 22" dia. x 25 hp. Drawblocks.	0902 42541/2/3 Telex 33644
2 15 DIS MSA WIRE DRAWING MACHINES 5,000ft./Min. with spoolers by Marshall Richards.	0902 42541/2/3 Telex 33644
3 CWT MASSEY FORGING HAMMER—pneumatic single blade mill.	0902 42541/2/3 Telex 33644
9 ROLL FLATTENING MACHINE 1700 mm wide.	0902 42541/2/3 Telex 33644
7 ROLL FLATTENING MACHINE 965 mm wide.	0902 42541/2/3 Telex 33644
COLES MOBILE YARD-CRANE 6-ton capacity lattice jib.	0902 42541/2/3 Telex 33644
RWF TWO STAND WIRE FLATTENING AND STRIP FLATTENING LINE 10" x 8" rolls x 75 HP. roll stand. Complete with edging rolls, turks head flaking and fixed recoller, air gauging, etc. Variable line speed 0/750ft./min. and 0/1500 ft./min.	0902 42541/2/3 Telex 33644
NARROW STRIP STRAIGHTENING AND CUT-TO-LENGTH MACHINE (1973) by Thompson and Munroe.	0902 42541/2/3 Telex 33644

WANTED

MODERN USED ROLLING MILLS, wire rod and tube drawing plant—roll forming machines—slitting—flattening and cut-to-length lines—cold saws—presses—guillotines, etc.

COMPANY NOTICES

REMOVED INCORPORATED

NOTICE TO F.D.R. HOLDERS

PAYMENT OF COUPON NO. 3

This is to notify S.D.R. holders that the coupon for the 10th March 1978, which was due for payment on 10th March 1978, has been paid. The coupon for the 10th March 1978, which was due for payment on 10th March 1978, has been paid. The coupon for the 10th March 1978, which was due for payment on 10th March 1978, has been paid.

INTERNATIONAL PACIFIC SECURITIES COMPANY LIMITED

The directors of International Pacific Securities Company Limited have decided to recommend a dividend of 10% on the ordinary shares of the company for the year ended 31st March 1978. The dividend will be paid on 10th April 1978.

LONDON BRICK COMPANY LIMITED

NOTICE IS HEREBY GIVEN

that the company has decided to recommend a dividend of 10% on the ordinary shares of the company for the year ended 31st March 1978. The dividend will be paid on 10th April 1978.

PERSONAL

HELP SAVE OUR ENVIRONMENT

from further suffering

Technical Page

EDITED BY ARTHUR BENNETT AND TED SCHÖETERS

ENERGY

Extracts heat from the roof

EXPERIMENTAL results to date for hot water services and either on a development programme as a feed to radiators or, which is about at its mid-term, through a heat exchanger, to indicate that with relatively low domestic warm air heating, cost additional equipment. It would be possible to reduce the heating and hot water costs for the average house by about 50 per cent, compared with all-electric solutions.

The work is in hand at the University of Aston in Birmingham in the Department of Physics and is being carried out by a group led by Dr. Ewart Neal, senior tutor in physics, which has a grant from a Science Research Council with a further 18 months to run. It is based on the use of the house roof as a radiation absorber, both directly from the sun and indirectly a heat pump and a simple heat store.

Air from outside the house is sucked into the space between the tiles and roof felt and its temperature is raised by the absorption of sun heat from the tiles.

The heat pump extracts this energy and delivers it to a large volume of water—6,000 gallons, contained in a swimming pool, liner membrane under the floor, boards—which is maintained at around 55 deg. C. throughout the year. This serves as offtake both

for hot water services and either on a development programme as a feed to radiators or, which is about at its mid-term, through a heat exchanger, to indicate that with relatively low domestic warm air heating, cost additional equipment. It would be possible to reduce the heating and hot water costs for the average house by about 50 per cent, compared with all-electric solutions.

The developers believe that they could manage with a con-nepture-coated container would be one solution, giving a life of at least 10 years with materials supplied as standard. Another method would be to use the salt solution idea which is being studied by GE in the U.S., and by Philips. This would permit volume needed to hold a given amount of heat to one-quarter. A practical measure of the amount of fluid required would be that needed to maintain comfort in the dwelling for, say, 10 days during which outdoor temperatures were around 1 deg.

Dr. Neal told the Financial Times that the aim of the work was essentially to design something that would go into existing houses without great upheavals. But at the same time, the heat pump was being redesigned with the aim of reducing cost energy and delivers it to a large volume of water—6,000 gallons, contained in a swimming pool, liner membrane under the floor, boards—which is maintained at around 55 deg. C. throughout the year. This serves as offtake both

Further information from Dr. Neal, Department of Physics, University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET. 021-359 3611.

MAINTENANCE

A sweeping difference

FIVE TIMES faster than a man cuts in labour, and savings in with a broom is the Cimex L60 the cleaning of windows, walls medium duty indoor/outdoor and other high level surfaces, vacuum sweeper. Its finger-tip it has a 7-litre capacity hopper control on the steering handle. A front-bar enables the operator to raise loading hopper of 45 litres the side brush clear of a surface from one area to another, thus avoiding unnecessary wear and tear. Details of the company's comprehensive range of floor cleaning machines at Cray Avenue, Orpington, Kent BR6 3PX. 26731.



Precision boring of deep holes in engineering materials is not a simple problem for the machine-tool specialist, especially when the diameter to length ratio exceeds 5/1. But a specialist in this type of work has just completed a contract for 50 pip-pip tubes with bores of eight inches where the ratio is above was close on eight to one. Tube-boring (Cheltenham), which is based at Tetbury, Glos., had already carried out similar work on tubes of smaller diameters. This was the first time such work had been done on tubes of 51 feet in length. The latter tubes, in EN8 40 tons tensile mild steel, required stock removal of about 12mm. But tolerance was ± 0.05 mm on bore diameter. More from Tube-boring on 0666 52826.

INSTRUMENTS

Vickers in microscope sales push

ALTHOUGH THE bedrock of the company's business may well remain in such areas as tank periscopes, gunights and similar military optics, Vickers Instruments continues to seek new markets for its high technology microscopes and, since the acquisition of Joyce Loebel last year, in microdensitometers.

A good example is the development work now in progress with International Research and Development Company, with financial support from the EEC, on an instrument to identify and count asbestos fibres in industrial atmospheres. Specific volumes of air will be drawn through a membrane and a special microscope attachment will enable an operator to count the collected fibres manually or automatically.

The Joyce Loebel company is also researching the asbestos problem in conjunction with Manchester University using its Magiscan image analysis system.

In the field of exports the Joyce Loebel flat bed microdensitometer has met with particular success in the USSR where business has topped £1m.

Of some significance is the fact that although the Russian industry has developed what Vickers describes as "a very similar" instrument, it seems that users there still prefer the U.K.-made unit.

An equivalent effort is now being made in the U.S. where the Vickers subsidiary company is to provide assistance.

In supplying the electronics industry the company reckons to be market leader in image shearing microscopes. Instruments that are used in integrated circuit "chip" manufacture.

"Shearing" refers to a split mounted inside the instrument measurements to a fraction of a micron by precise line-up of the image edges as they cease, or subject to identical shocks during transit.

Vickers—already claiming about half the "silicon valley" market in the U.S.—is about to

announce an automatic version of the unit in which television techniques and digitisation of the image are used to detect these alignments automatically and display the readings.

The company sees these achievements as a vital way of keeping the U.K. in the optical instrument business, the "college bench" microscope market having been scooped by low cost producers.

It has recently been phasing out its "bottom end" ranges of instruments, at the same time striking up cross-franchise agreements with companies such as Union Optical and Nikon in Japan.

Apart from Joyce Loebel's specific market in microdensitometers, (it has about 65 per cent of world business), Vickers is to-day essentially addressing the £30m. world market in advanced microscopes costing over £2,000.

Tells when parcel is dropped

PRIMARILY designed to monitor the shocks to which goods are subjected during transit a new device is also suitable for the measurement of ground vibrations due to heavy traffic, pile driving, seismic activity, etc.

Type 2503 Bump Recorder consists of a portable battery-operated measuring instrument combined with a strip recorder, both of which are housed in an exceptionally sturdy case.

A triaxial accelerometer which simultaneously monitors shock in three mutually perpendicular directions is used to resolve random shocks into three vectors, the signals from which are summed to produce a single value representing the shock level.

This accelerometer can be mounted either on the transport object under observation and connected back to the instrument by cable, or alternatively mounted inside the instrument case itself when the instrument is considered to be sufficiently near the transported object to be subject to identical shocks during transit.

E and K Laboratories, Cross Lanes Road, Hounslow TW3 2AE. 01-570 7774.

MACHINE TOOLS

Miller has useful options

UNIVERSAL MILLER Induma 2040 from RK International is a 12½ hp machine with direct drive from the electric motor into the gearbox. This provides 12 speeds in the range 30 to 1,500 rpm.

An independent 2½ hp motor powers the feeds. Eighteen feed rates are available on each axis, 10 to 300 mm/min. on both the horizontal axes and 4 to 320 mm/min. on the vertical axis. Rapid traverse rates are 2,500 mm/min. horizontal and 1,000 mm/min. vertical. So that climb-milling operation can be carried out, a back-lash eliminator is fitted to the longitudinal screw.

Maximum table movements are 1250mm. longitudinal, 570mm cross and 300mm vertical.

Standard equipment on the Induma 2040 includes coolant system, a milling arbour with

Commercial building

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Norwest Holst

total capability

(01-235 9951)

spacer collars and two arbours

support. For maximum flexibility one option that can be supplied is a vertical milling head. There is also available a slotting attachment which can be set at any angle and has a maximum stroke of 110mm. For milling operations at any angle in two planes, there is available an independent motorised over-arm, complete with a universal milling head. It is powered by a 5.5 hp motor which gives 12 out, a back-lash eliminator is fitted to the longitudinal screw.

Maximum table movements are 1250mm. longitudinal, 570mm cross and 300mm vertical.

Standard equipment on the Induma 2040 includes coolant system, a milling arbour with

Standard equipment on the Induma 2040 includes coolant system, a milling arbour with

COMMUNICATIONS

Short wave scrambler

UNVEILED by Marconi at the Communications '78 exhibition is a cryptographic equipment built before for HF, their size and allow "scrambled" speech to be sent over a high frequency radio link.

Called Cryptex, it is compact enough to permit mounting in a vehicle (in a Clansman radio case), or it can be accommodated in 19-inch rackings.

Elements of the unit are a device for converting speech to a digit stream and vice versa, a cryptographic unit which rearranges the stream so that to an unauthorised listener it would appear to be random, and a modem which turns the digit stream into a series of 24 tones for modulation on to the HF carrier.

The significant development is that although the bit rate is only 2400 bits/sec., the quality of reproduced speech is comparable to that of speech digitisers working at two times the speed. Thus the system can work over

the narrow band HF channels. Furthermore, although such equipments have been built before for HF, their size and allow "scrambled" speech to be sent over a high frequency radio link.

The encoding process consists of mixing a "key stream" of digits with the randomised stream obtained from the speech signal; the process is reversed at the other end. In transmission, the data stream remains essentially random.

Each customer is allocated an exclusive group of over 10bn. key stream codes. Selection is made easily by means of ten thumbwheel switches, and the setting at the receive end must be identical.

According to the company, repetitive features cannot occur in the transmission even after months of continuous operation and in any case, the code could, if necessary, be changed every few minutes. Setting of a code on the wheels takes about 30 seconds. More from Marconi Space and Defence Systems, on 0245 53231.

electrical wire & cable?

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A FINANCIAL TIMES SURVEY

MECHANICAL HANDLING

MAY 2 1978

The Financial Times proposes to publish a survey on Mechanical Handling. The provisional synopsis and date are set out below.

INTRODUCTION The growth of the industry and its current problems, largely generated by the lingering recession at home and overseas.

THE WORLD INDUSTRY The structure of the world mechanical handling industry—the role of the multi-national companies.

The following articles will discuss mechanical handling techniques and products in specific environments.

THE WAREHOUSE
THE FACTORY
THE CONSTRUCTION/BUILDING SITE
DOCKS AND PORTS
AIRPORTS
ROAD VEHICLES

SAFETY AND TRAINING This aspect has become even more important in the wake of the Health and Safety at Work regulations.

COMPUTERS There is growing use of computers to control handling equipment.

INDUSTRIAL STRATEGY Various sectors of the mechanical handling industry are involved in the industrial strategy programme. Its aims and achievements so far.

PALLETS An essential element in modern materials handling. The efforts being made to cut the cost to industry of pallet losses.

NATIONAL MATERIALS HANDLING CENTRE The Centre is now seven years old. Set up to provide a modest information and advice service, it has developed substantially.

RACKING SYSTEMS Modern racking techniques have become an integral part of warehouses and each system must be related to the type of mechanical handling techniques being used.

THE INSTITUTE OF MATERIALS HANDLING Set up in 1952, it aims to promote the science of materials handling and to further the knowledge of that science among the public generally.

CRANES AND HOISTS The crane and hoist section of the industry will also be given specific coverage.

For further details on the editorial content and advertising rates please contact:

Nicholas Whitehead
Financial Times, Bracken House,
10 Cannon Street, London EC4A 3DF.
Tel: 01-248 8000, Ext. 7112.

FINANCIAL TIMES
EUROPE'S BUSINESS NEWSPAPER

The content and publication date of Surveys in the Financial Times are subject to change at the discretion of the Editor.

COMPUTING

Displays to cost less

FIRST OFFERINGS in Britain from the Israel-based Elbit Computers company of Haifa, which has set up affiliates in the U.K., Germany and France, are two high performance display terminals offered at prices likely to cause some alarm among the competition.

The terminals are compatible with IBM controllers and they are backed by development experience which has enabled the company to sell some 6,000 units into world markets.

Elbit later this year will be launching in Britain its PACT small business system, and for the current launch programme in Europe expects to spend something like £2m.

The company is also making a name for itself as a builder of sophisticated equipment to "bespoke" designs.

Elbit Data Systems operates from Copthall House, St. Ives Road, Maidenhead, Berks.

Control of power network

EGYPTIAN Electricity Authority (EEA) has selected Control Data Corporation as prime contractor on a \$77m. computer-based system to monitor and control Egypt's major electric power network, in what could be the biggest civil computing award to date.

Under a contract from the EEA, Control Data will install an energy control system in the National Energy Control Centre in Cairo that includes two large-scale CDC Cyber 173 computers, four Cyber 18 computers, related peripheral equipment and multiple terminals to be used to monitor and control the generation and transmission network.

Control Data will supervise activities of the project's major sub-contractor, GE (U.S.A.) which will install a \$10m. communication system, using a combination of power-line carriers, telephone and microwave products.

CDC is on 01-930 7344.

Down-range financial packages

FINANCIAL reporting software developed originally for users of large computers by Package Programs is being adapted for small users who have previously had to pay excessively for custom-built software.

With MMS general ledger, accounts receivable and accounts payable packages available for IBM System 3 and ICL 2903 computers, developments are currently under way for systems to run on machines from Burroughs, Digital, Data General, Hewlett-Packard, Honeywell and Interdata.

The needs of IBM System 32 and System 34 users will also be met in the near future.

"PPI" is aiming at the 5,000 small business computers in the U.K., a sector of the market which is growing fastest of all.

Package Programs is at 91, Blackfriars Road, London SE1 8JW. 01-633 0121.

In Japan, you've got to play your cards right.

The Japanese way of life is very different from ours. And business etiquette is an important aspect of that way of life. Formalities are very precise and are part of a ritual that is both charming and obligatory.

At meetings and receptions, for example, you must say it with cards. Business cards. The exchanging of them is as essential as a handshake. And more than just good manners.

In fact, it's a very useful practice which helps you to pronounce difficult names and to discover the status of the people you meet. Through the JAL Executive Service, name cards—in your own language and in Japanese—can be supplied quickly and inexpensively.

All you have to do is fill in a request form from your nearest JAL office. And then there's the authoritative book 'Business in Japan'. This book will ensure you get valuable insight into Japanese business practice and procedure, including etiquette and behaviour.

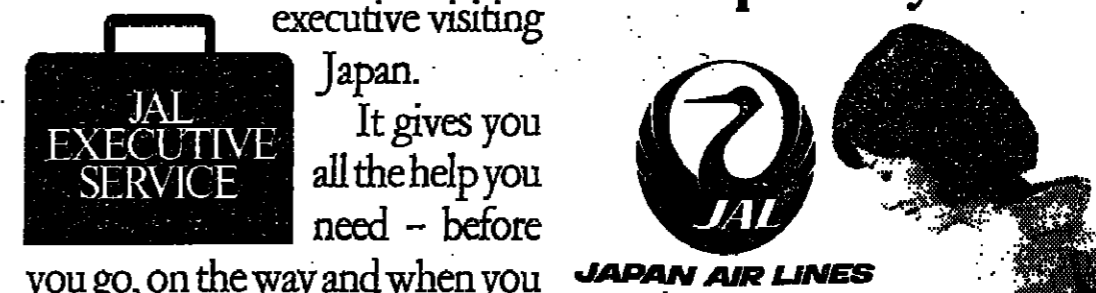
An exclusive paperback edition is available only from JAL offices. These are just two of the ways that you can get help through the JAL Executive Service, the first and still the most comprehensive package of business aids for the executive visiting Japan.



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Position _____
Company _____

FTP21

CONTRACTS AND TENDERS

STATE OF ISRAEL

MINISTRY OF LABOUR & SOCIAL AFFAIRS
INDUSTRIAL DEVELOPMENT PROJECT—
VOCATIONAL/TECHNICAL TRAINING
JERUSALEM, P.O.B. 915



INTERNATIONAL COMPETITIVE BIDDING FOR EQUIPMENT

1. The Government of Israel—Ministry of Labour—plans to improve and expand its system of Vocational/Technical training institutions and for this purpose has received a loan from the International Bank of Reconstruction and Development (IBRD).
2. The Directorate of the Project announces the publication of the public international tender No. 14.01.T for the supply of equipment in the technical/vocational branch of Electricity.
3. Manufacturers and/or suppliers of all member countries of IBRD, and of Switzerland, are eligible to take part in the bidding and are invited to participate.
4. Tender documents may be obtained from the Directorate of the Project at the above noted address, against a payment by bank order or cheque for the sum of thirty (30) U.S. Dollars, made out to the Ministry of Labour, Israel. Such payment will cover this tender and all future tenders published within the framework of this project.
5. Tender documents will be forwarded by registered air-mail to the applicant complying with paragraph 4 above. The completed proposal, despatched to the Directorate in the special envelope provided, and in strict accordance with the general instructions to bidders (which will be forwarded to the applicant simultaneously with the tender documents) should reach the Directorate not later than 1200 hours on June 16, 1978. Proposals arriving later than the time limit fixed will not be considered and will be returned unopened to the bidder.
6. The Directorate reserves the right to accept any proposal for any individual item or items or all the items listed, to increase or decrease the quantities to be purchased and to reject any or all of the bids received.

NISSAN LIMOR
Project Director

Democratic
Republic of Somalia
Mogadishu Water
Supply Stage 1 -
Expansion Drilling
of Boreholes

The Mogadishu Water Agency invites expressions of interest in tendered and experienced drilling contractors, for the drilling, casing, screening, developing and yield testing of eight production boreholes in an extension to an existing wellfield. The location of the wells is approximately 20 km north of Mogadishu.

The wells shall be drilled to 310 metres diameter and the total length of drilling will be of the order of 1500 m in the strata to be drilled comprises coarse grained and partially cemented sands overlying limestone. The wells will be screened and cased, with imported gravel pack and subjected to step draw down and recovery tests after development.

Expressions of interest should reach the consulting engineers Sir Alexander Gibb and Partners (Africa), P.O. Box 20020, Nairobi, Kenya, not later than Friday, 5th May, 1978.

CALL FOR TENDER



EMIRATES & SUDAN INVESTMENT CO. LTD.

TENDER FOR THE CONSTRUCTION OF 200 WAREHOUSES
(RED SEA REGION)

PHASE ONE: 34 WAREHOUSES AT PORT SUDAN

1. The Chairman of the Board of Directors, Emirates & Sudan Investment Co. Ltd., invites Tenders from competent contractors for the construction of 34 "Thirty four" Warehouses complete at Port Sudan (D.R. of Sudan) as phase one from the total number above.
2. The Tender Documents "in English only" can be obtained from the office of the Managing Director of the Emirates & Sudan Investment Co. Ltd., 16 Babiker Bedri St., P.O. Box 7036, Khartoum, Telex 524 EMSU KM, Telegraphic Address: EMSU Khartoum, during office hours against payment of L.S.100 (one hundred Sudanese pounds = £145 US\$290) non-refundable.
3. Tenders will be accepted for 4 warehouses as a unit and Tenderers should deposit a sum of L.S.4000 (Four Thousand Sudanese pounds) or its equivalent in other convertible currencies either by certified cheque or a letter of guarantee from a reputable bank valid for at least three months after the closing date as a preliminary deposit in the name of the Managing Director, Emirates & Sudan Investment Co. Ltd., for each unit. Tenderers for more than one unit should multiply their deposit accordingly. Separate offers per unit for lighting and fire systems may be added as option.
4. The successful Tenderer/Tenderers shall be asked to sign formal contract within two weeks after being notified of the acceptance in writing and to complete the deposit to 10% (ten per cent) of the total value of the contract either by a certified cheque or a letter of guarantee from a reputable bank valid for one year after handing over all works. Other forms of guarantee may be required for longer period. Any other plans for payment that may lead to the reduction of the cost could be proposed by the tenderers. If the contractor fails to sign the contract within the specified time, he shall lose his right to recover the preliminary deposit.
5. The preliminary deposit shall be refunded to the unsuccessful tenderers two weeks after the firm award of the contract.
6. Tenderers shall state clearly the following:
 - a) The names, qualifications, and experience of engineers and technicians who

- will be responsible for the execution of the works.
 - b) Examples of similar projects they have executed.
 - c) A detailed programme specifying the progress of the works and the time required for the completion of all works specified in the tender and shown in the drawings, as from the date of the signature of the contract.
 - d) A list of equipment and machinery in their possession necessary for execution of the works.
7. The supply of all materials, equipment and machinery whether local or imported necessary for the execution of all works is solely the responsibility of the Contractor.
 8. Tenders shall be valid for at least three months after the closing date mentioned in para (12) below. The offer may be based on the detailed alternative or for an accepted alternative to be presented in detail to the Managing Director.
 9. All information relevant to the tender shall be submitted in English Language.
 10. For imported items, The Emirates & Sudan Investment Co. Ltd. will directly pay all insurance, clearance, customs and other Port charges.
 11. Foreign Currency will be paid directly from The Emirates & Sudan Investment Co. Ltd. reserves with The National Bank Abu Dhabi.
 12. Tenders should bear the prescribed stamp duty and should be addressed in sealed envelopes bearing the words (TENDER FOR THE CONSTRUCTION OF WAREHOUSES AT PORT SUDAN), to The Managing Director, Emirates & Sudan Investment Co. Ltd. and should be delivered to the Tenders Box at the Company's Head Office, 16 Babiker Bedri St., 3rd Floor, Khartoum, Sudan, not later than 12.00 Noon Sudan Time Tuesday the 20th of June 1978.
 13. Any tender which does not comply with any of the above-mentioned requirements will be rejected.
 14. The Chairman of the Board of Directors, Emirates & Sudan Investment Co. Ltd., is not bound to accept the lowest or any other tender.

TURKISH STATE RAILWAYS (TCDD)
THE CHAIRMANSHIP OF CENTRAL
PURCHASING AND SALES COMMISSION

Tenders are invited for 1,500 tons of profiles for steel sole plates of which the technical features are written in the specifications

1. The above materials are to be purchased by receiving bids from the countries who are members of the World Bank (IBRD).
2. The specifications prepared for this purpose in Turkish and English can be purchased from TCDD's Central cash office in Ankara and Sirkeci cash office in Istanbul with a price of TL.250.
3. The bids should be received by or handed in person to our commission not later than Thursday, May 25, 1978, 15.00 hours, for a meeting at TCDD Supply Department on that date.
4. The bids should be submitted in seven (7) copies (together with their Turkish versions, if possible), and the words "TCDD İstemesi Genel Müdürlüğü Merkez Alım ve Satım Komisyonu Başkanlığı Gar-ANKARA/TURKEY" and "This is an offer for the material subject to IBRD's loan" and also subject of the Bid should be written on the envelopes containing the bids.
5. TCDD shall be completely free to award Contract (S) for all or some of the items to any bidder at its sole discretion.

Kingdom of Thailand
NOTICE TO
CIVIL ENGINEERING CONTRACTORS

The Government of the Kingdom of Thailand has received a loan from the World Bank to help finance construction of three new bridges, about 140 km and expected to cost over US \$ 50 million equivalent. The construction will be divided into 3 contracts to be awarded in 1978 and 1979 and will include about six million cubic metres of earthworks, one million square metres of asphalt paving and six thousand linear metres of bridges.

Construction firms from member countries of the World Bank and Switzerland are invited to indicate their interest in prequalifying for bidding on the above works. Replies, by letter or cable, should be addressed to:

DIRECTOR GENERAL
DEPARTMENT OF HIGHWAYS,
SRI AYUTHAYA ROAD,
BANGKOK, THAILAND.

Replies should be received by 15th May, 1978 and questionnaires will then be sent for preparation of prequalification applications.

INVITATION TO TENDER

The Posts and Telecommunications Corporation of the Republic of Ghana once again invites tenders, who will be limited to nationals of countries of the International Bank for Reconstruction and Development (IBRD) and Switzerland only for parts of

NATIONAL TELECOMMUNICATIONS EXPANSION PROJECT

The invitation to tender is for the following two sub-projects:—

Sub-project A: Installation on turn-key basis of new automatic telephone exchanges (rotary and electronic) which comprise one trunk exchange with manual switchboards (tertiary centre), for local exchanges equipped with 15,000 lines in total in multi-exchange areas, 5 local exchanges equipped with 2,500 lines in total together with manual switchboards (primary or secondary centres in single exchange areas), and power equipment.

Sub-project B: Procurement of 170 sets of electronic teleprinter.

Prospective tenderers may obtain copies of the specifications against payment of two hundred U.S. dollars (\$200), per complete copy, daily between 09.00 hours and 15.00 hours GMT from 20th March, 1978, to 15th May, 1978, at the address given below:

WORLD BANK PROJECT OFFICE (Room 312, 3rd Floor),
THE POSTS AND TELECOMMUNICATIONS CORPORATION BUILDING,
ACCRA, NORTH, ACCRA, GHANA.

The closing date for submission of the tenders will be at 11.00 a.m. Ghana time on 25th August, 1978.

Director General,
The Posts and Telecommunications Corporation of the Republic of Ghana.

CONTRACTS AND TENDERS

APPEAR EVERY MONDAY

For further details contact:

FRANCIS PHILLIPS on 01-248 8000 Ext. 456.

SOCIALIST PEOPLE'S LIBYAN ARAB JAMAHIRIAH HOUSING MUNICIPALITY

ANNOUNCEMENT OF AN INTERNATIONAL TENDER FOR THE BUILDING PROJECT OF THE AL-MAHARI AL-JADID HOTEL IN TRIPOLI

The Committee for the Al-Mahari Al-Jadid Hotel building project in Tripoli publicly announces its invitation to international tenderers, national, general and stock companies, as well as international companies having hotel construction expertise in building 4 or more star hotels—and this shall be in accordance with the following terms:

1. The general conditions, specifications and drawings related to the project shall be obtained from the Headquarters of the Committee for Al-Mahari Al-Jadid Hotel at the Housing Municipality in Tripoli for the sum of 500 (five hundred) Libyan Dinars only, which shall be paid into the public funds at the offices of the Treasury in Tripoli.
2. The tender shall be in two parts:
 - a) Construction and machinery
 - b) Furnishings and equipment.
 The tender shall be offered for either one or both parts.
3. The company offering the tender shall send with its tender a vitae detailing its previous experience in such works, carried out either in the Libyan Jamahiriah or outside it.
4. The international companies participating in this tender must be represented by Public Agencies or Authorities from the National Sector or Companies of the Public Sector. An address at which the tenderer can be contacted shall be given and the contents of any correspondence with him shall be considered valid. In the event that the tenderer is an agent, he shall enclose with his tender a certified Power of Attorney from his Organisation, together with a listing of the rights and limitations of his agency; the names of the persons directly responsible for the execution of the terms of the Contract; the payments made and the receipts received and signed by the Company,

as well as specimen of signatures put to copies of both the Contract and the Power of Attorney.

5. An official copy of the Company's Contract of Establishment and Articles of Association shall be enclosed with the tender. These documents must meet all requirements and procedures stipulated by Law and the By-Laws.
6. A tenderer shall, by means of a Declaration to be enclosed with the tender, be bound to adhere to the terms of the Israeli Boycott, and in the event of violation of the Declaration the Committee shall have the right to cancel the Contract by sending a registered letter of cancellation. The tenderer shall be without right to demand compensation.
7. If the tenderer has previously carried out works in the Jamahiriah, the tenderer shall produce a certificate of taxes due to the Tax Authorities.
8. An initial deposit of the sum of 100,000 (one hundred thousand) Libyan Dinars shall be enclosed with the tender. This deposit shall be valid for a period of six months from the date of the opening of the envelopes, and shall be presented in one of the following forms:
 - a) A bank draft certified by one of the banks operating in the Jamahiriah
 - b) A letter of guarantee issued by one of the banks operating in the Jamahiriah—guaranteeing that the contractor shall maintain the same prices of his tender for a period of six months from the date of the opening of the envelopes.
9. In the event that the chosen tenderer does not sign the said Contract within two weeks of the date of his being notified officially of the acceptance of his tender, the deposit shall be retained.
10. Tenders shall be presented to the Committee for the Al-Mahari Al-Jadid Hotel at its Headquarters in the Housing Municipality in Tripoli

on a Tender Form stamped by the Municipality and signed by the Chairman of the Committee. The tender shall be handed into the Committee Treasurer, and a receipt shall be given in return. The tender shall be in a sealed envelope, sealed with red wax, and on it shall be written: Enclosed is the Tender for the Al-Mahari Al-Jadid Hotel Project.

11. The final date of acceptance of tenders shall be the 30th April 1978 and no tender for whatever reason presented thereafter shall be considered.
12. The tenderers may attend the procedure of the opening of the envelopes, which shall be at exactly 11 o'clock on the said date.
13. The accepted tenderer shall, within fifteen days from the date following the date of the letter sent to him by registered post notifying him of the acceptance of his tender, pay a deposit equivalent to 5% (five per cent) of the total value of the works he has been commissioned to do. He may also pay the remainder of the provisional deposit so that it equals the value of the required final payment. The Committee may, by sending a registered letter and without need for taking any further steps, cancel the Contract and retain the provisional deposit.
14. Any international company participating in this tender must be already registered in the Registry of International Contractors at the Housing Municipality in the Jamahiriah and this shall be observed in ample time before the procedure of the opening of the envelopes.
15. The Committee for the Al-Mahari Al-Jadid Hotel Tender shall have the right to either accept or reject any tender offered without giving any reasons for taking either decision.

Signed: The Committee for the Al-Mahari Al-Jadid Hotel Tender in Tripoli.

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Overworked taxmen

BY DAVID CHURCHILL

WHEN MR. DENIS Healey finishes his Budget speech tomorrow afternoon the question will remain not only whether he can get the Finance Bill through Parliament unscathed but also whether Britain's tired tax officers are willing or able to carry out the job.

For the first time ever the Inland Revenue Staff Federation, which represents the bulk of Revenue staff, will not automatically acquiesce in implementing the inevitable Budget tax changes. Instead the union will hold a special executive meeting the day after the Budget to decide its course of action.

Extra work

Since last October's mini-budget this normally-moderate union has already staged a three-month overtime ban and work to rule in protest at the amount of extra work its members have been expected to do. Feeling among the tax staff throughout the U.K. is said to be running high: if the pressures of last year are repeated then more severe—and for the tax officers unprecedented—action may follow.

Although the Federation has agreed to honour the Government's pay guidelines this year it has already slapped in a claim for extra pay from next April to take account of the extra strain imposed by changes in the tax system. But the union has firmly told the Government that it wants the extra money agreed now as a sign of good faith.

Far cry

As Mr. Tony Christopher, the Federation's general secretary, put it: "Notice has therefore been given. We are not to be taken for granted. There are some major causes of discontent in the Revenue and it is clear that members will not put up with them or be put upon for much longer."

All this is a far cry from a few years ago when there was hardly a murmur from Revenue staff about the pressure of overwork. Every year at Budget time there was a degree of pressure arising from tax changes, but nothing with which the staff were unable to cope after a few weeks of overtime.

Yet now some tax offices are running months behind schedule with some parts of their

work. Staff morale, traditionally high as staff close ranks in the face of public abuse against the Revenue, has plummeted dangerously in some cases. The continuing pressures on the staff's health also have to be taken into account.

There are many reasons why the tax machine is creaking—not least the vagaries of politics.

Last year alone there was the traditional spring Budget followed by two mini-Budgets in the summer and autumn. On top of these there are other necessary changes imposed by the falling building society interest rates and changes in child allowances. All this was in addition to the regular workload for Revenue staff which

week illustrates the extra workload imposed on staff last year. November 1976 to April 1977: Annual recoding was carried out and objections to these settled. In the last few weeks of March, tax deduction cards were issued to balance out tax actually paid, with tax that should have been paid. In about six out of seven cases, the tax deductions are usually correct within acceptable tolerances and no further assessment is necessary.

Recoding

April to June 1977: Tax return forms were issued and the recoding changes caused by the Budget carried out. Special child allowance rates for certain students introduced.

June to September: New codes issued as a result of increased National Insurance benefits. Increase in exemption limit for certain savings bank interest. Changes caused by amendments to Finance Bill in committee stages. July mini-Budget tax changes leading to recoding notice being sent out. September to January, 1978: Changes in building society interest rates led to recoding October mini-budget results in yet further recoding.

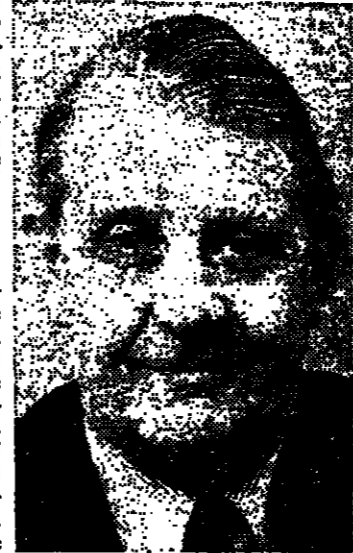
January to April 1978: Annual recoding in advance of tax returns being sent out and tax deduction cards sent out.

Throughout the whole April-to-April tax year, staff are also responsible for usual work. This includes amending codes for changes in individual circumstances; dealing with newcomers to PAYE; changes of employment, and retirements; and repaying tax to unemployed and those leaving the U.K.

Tinkerings

The official side of the Revenue is also concerned about the effect on staff morale of recent pressures. After last October's mini-budget, Sir William Pile took the unusual step of writing to all staff telling them that the Prime Minister and Chancellor were "fully aware of the strain on you all and of your devoted response."

With tomorrow's Budget, however, words may not be enough, especially if there are further tinkerings with the tax system. An extra 1,300 staff would be needed to deal with a new lower tax band, but they are unlikely to be recruited if such a measure is included in the Budget, according to the union.



Sir William Pile, chairman of the Board of Inland Revenue, and Mr. Anthony Christopher, general secretary of the union.



chans and the impact of inflation on tax thresholds. But, fundamentally, the Pay as You Earn tax system's problems stem from the fact that it is a manual operation. Every piece of financial information about a person's income and allowances has to be entered on to the record by hand. That is one reason why Revenue staffing levels have jumped from 51,000 to 83,000 over the past 20 years—with the magic figure of 100,000 a distinct possibility in the near future, according to Sir William Pile, Inland Revenue chairman, in recent evidence to the Public Accounts Committee.

Attempts at computerisation have fallen foul of different ideas by successive governments to reform the tax system. But experiments in computerisation are currently being carried out in Scotland and the North of England.

But the real crunch has come over the past two years. Britain's budgets becoming only months apart, instead of once a year.

is designed fully to occupy their time. It means that every few months, tax staff would have manually to alter the tax records for 24.7m. taxpayers.

From a purely administrative point of view, the problem is worsened by the physical drawbacks of such a vast manual records system. All tax information for each taxpayer for seven consecutive years is contained on a card measuring 9 inches by 7 inches. Details on the card can be filled in by at least two and usually several more staff in ink. A column 1 inch wide by 4 inches deep for each year contains details of all tax allowances. Every time they change—and they were altered several times last year for budgetary and other reasons apart from changes resulting from different personal circumstances—it means a new entry and recalculation of tax code.

Computers

Attempts at computerisation have fallen foul of different ideas by successive governments to reform the tax system. But experiments in computerisation are currently being carried out in Scotland and the North of England.

But the real crunch has come over the past two years. Britain's budgets becoming only months apart, instead of once a year.

Mistakes

The effect is often to produce a blotchy and grubby card file which can inevitably lead to mistakes.

The sequence of events in the tax year which finished last



Businessman's Diary

OVERSEAS TRADE FAIRS AND EXHIBITIONS

Apr. 14-23	International Trade Fair	Milan
Apr. 15-24	Swiss Industries Fair	Basle
Apr. 17-28	International Spring Fair	Zagreb
Apr. 18-21	International Shipcare 78	Hamburg
Apr. 21-34	Portuguese Fabrics and Clothing Exbn.	Lisbon
Apr. 24-27	Solar Technology Exhibition and Conference	Bahrain
Apr. 28-May 4	German Agricultural Show	Frankfurt
Apr. 29-May 15	International Trade Fair	Brussels
Apr. 29-May 15	International Paris Trade Fair	Paris
May 6-11	International Book Festival	Paris
May 9-11	Comtec Europe	Brussels
May 13-20	Woodworking Machine Exhibition	Milan
May 16-20	Welding Fair	Zagreb

BUSINESS AND MANAGEMENT CONFERENCES

Apr. 10-11	Financial Times: Business and the European Community Directives	Grosvenor House, W.1
Apr. 10-12	Brintex: Energy Utilisation and Conservation in Industry	Royal Lancaster Hotel, W.
Apr. 10-14	P-E Consulting Group: Application of Production & Inventory Control	Egham, Surrey
Apr. 10-14	Keppel Tregoe: Decision Making for Senior Management	Bournemouth
Apr. 11-12	Anthony Skinner: New Inspection Techniques and Methods	Café Royal, W.1 Zurich
Apr. 12-14	Seminar Services: International Tax Planning	
Apr. 13	Export Group for the Constructional Industries: Management Contracting Overseas	Cavendish Conf. Centre, W.
Apr. 13	British Institute of Management (N.E. Region): Interpreting Accounts to the Non-Financial Manager	Harrogate
Apr. 16-20	Retail Consortium: International Conference of Retailers	Grosvenor House Hotel, W.
Apr. 17-21	London Chamber of Commerce and Industry: Understanding the Arab World	69, Cannon St., E.C.4
Apr. 18-19	British Association for Commercial and Industrial Education: Management Development	Leicester
Apr. 19	Henley Centre for Forecasting: The Budget	Carlton Tower Hotel, S.W.
Apr. 19	London Chamber of Commerce and Industry: Agri-Business in the Middle East & North Africa	69, Cannon St., E.C.4
Apr. 20	McGraw-Hill: Managerial Work—Its Demands and Choices	Royal Garden Hotel, W.8
Apr. 20-21	Legal Studies & Services: Claims Against Carriers—Procedures and Remedies	Hilton Hotel, W.1
Apr. 21	Leeds University: The New United Kingdom Patent Law	Leeds
Apr. 23-24	Institute of Grocery Distribution: Annual Convention	Hotel Metropole, Brighton
Apr. 23-28	Inbucon: Improving Industrial Relations	Selsdon, Surrey
Apr. 23-28	Centre for International Briefing: Working Effectively in Nigeria	Farnham Castle, Surrey
Apr. 26	British Overseas Trade Board: Exporting to Australia	Inn on the Park Hotel, W.1
Apr. 26-27	European Study Conferences: Direction and management of the smaller private company	Kensington Palace Hotel, W.
Apr. 27	British Council of Productivity Associations: Provision and disclosure of company information	London Hilton W.1
Apr. 27	London Business School: Leases and how to value them	Sussex Place, W.1
Apr. 27-28	Council for Energy Studies: World Energy Economics Conference	Inn on the Park, W.1
Apr. 27-28	Oyer: Advertising Association Conference	The Brighton Centre
May 3-6	Institut of Metal Finishing: Annual Technical Conference	Palace Hotel, Torquay
May 4	British Institute of Management: Management of Product Design and Innovation	Royal Lancaster Hotel, W.2
May 6-8	National Chamber of Trade: Annual Conference	Llandudno

WEEK'S FINANCIAL DIARY

The following is a record of the principal business and financial engagements during the week. The Board meetings are mainly for the purpose of considering dividends and official indications are not always available whether dividends concerned are interims or finals. The sub-divisions shown below are based mainly on last year's timetable.

Senior Exec. 2c
Securities Co. W.J.
Interiors
Smalls Inds.
- DIVIDEND & INTEREST PAYMENTS -
Anglo-International Invest. Trust 2c
Anglo-American Associated 2c
Anglo-American Petroleum 2c
7.25c
4.25c and 13.25c
Midwestern Oil 5p
O'Brien Developments 1.2p
Pavson Wm 11.0.25p
SCB Group 2.75d
Washburn Dredge 4.4415c
- DIVIDEND & INTEREST PAYMENTS -
Alkali 9.50cBd. Red. 12.47/8 52.0998
Allanport 5.00cBd. Red. 12.47/8 52.0998
Baldwin 5.00cBd. Red. 12.47/8 52.0998
Sawsett 5.00cBd. Red. 12.47/8 52.0998
B. 5.00cBd. Red. 12.47/8 52.0998
5.00c
Columbia 7.00cBd. Red. 10.10/79 3.00c
Braxborough 7.00cBd. Red. 10.10/79 3.00c
Cotton 7.00cBd. Red. 10.10/79 3.00c
Cambridgebridge 5.00cBd. Red. 10.10/79 3.00c
5.00c
Campan 6.00cBd. Red. 10.10/79 3.00c
Cardin 5.00cBd. Red. 12.47/8 52.0998
Cassell 7.00cBd. Red. 10.10/79 3.00c
Colchester 5.00cBd. Red. 12.47/8 52.0998
Conquest 7.00cBd. Red. 10.10/79 3.00c
Lumberman and Kilbath 5.00cBd. Red. 12.47/8 52.0998
Cotton 5.00cBd. Red. 12.47/8 52.0998
Valley 5.00cBd. Red. 12.47/8 52.0998

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Chairman: Mr. A. Shaw, Ashridge Management College.
Speakers: Rt. Hon. Peter Walker, MBE, MP; W. Weinstock, Fellow in Politics, Balliol College; J. Hargreaves, J.P., Chairman, Matrix Corporate Affairs; T. Price, Secretary General—Uranium Institute.
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Monday April 10 1978

An erratic President

THERE IS, on the face of it, a good deal to be said for a NATO decision to defer the production, and certainly the deployment, of the neutron bomb until the implications for arms control have been fully considered. Too often in the past the introduction of new weapons technology has simply led to a new arms race without any compensating increase in security. The development of multiple independently targetable re-entry vehicles (MIRVs) by the Americans is a case in point. These were not included in the first strategic arms limitation agreement (SALT I). Yet the omission made SALT I less of a breakthrough in arms control than might otherwise have been possible. It also halted progress towards an agreed balance of strategic power: the two superpowers merely began to compete in the quality of their weapons where they had previously competed in quantity. And, of course, the American monopoly did not last. The Soviet Union now has its own MIRVs and has made great gains in the accuracy of its strategic weapons.

Too late

The neutron bomb offered a comparable basis for negotiation. NATO could have said to the Warsaw Pact: "Look, we have this new weapon which we are quite capable of introducing and which would go a long way towards diminishing the effectiveness of your present superiority in tanks. You could, however, remove the need for it by reducing your own tank armies. There is a negotiating forum, known as MBFR (for mutually balanced force reductions), in which this could be perfectly well discussed. Alternatively, you might like to come up with some ideas of your own. For instance, there is the SS-20 which is not covered by any existing arms control negotiations, but which you have recently targeted on West European population centres. It's a much bigger weapon than the neutron bomb and, being strategic rather than tactical, quite different in kind, but still, if you were prepared to restrict deployment, perhaps we could talk."

Such an approach could have had the further advantage of uniting the NATO allies. It and it is no way to lead an would have put the Atlantic alliance,

Swing

There is not very much that NATO can now do to recoup the damage, except to pretend that the position it has now reached is where it would have preferred to have been all along. The Soviet record of reciprocity in arms control is not good. The Russians are now going to be tested again: if they are not forthcoming, the result will be almost certainly a resumption of the arms race, both in quality and quantity. One does not believe that is what President Carter wanted. But one doubts whether even he will be able to resist it. That is exactly the kind of sudden swing in East-West relations which a had the further advantage of uniting the NATO allies. It and it is no way to lead an would have put the Atlantic alliance,

Little new from Copenhagen

THE NINE like to regard their regular summit meetings as un-sensational, workmanlike gatherings, at which it is not always necessary to take dramatic decisions. It is often enough, they argue, for Heads of Government to have a general discussion of EEC and world problems and deal expeditiously with any items of outstanding business. By these standards, the latest session of the European Council in Copenhagen, which ended on Saturday, has been a modest success.

Elections

The summit quickly agreed on a date for the first direct elections to the European Parliament, which will now be held in June next year, just 12 months after the original target date. There appears to be little ill-feeling towards Britain for causing the delay — indeed, for different reasons, it is quite welcome to both France and West Germany. There was equally little difficulty in agreeing a new commitment to democracy and human rights that will apply to all member states, but which has the three Mediterranean candidate countries — Greece, Portugal and Spain — particularly in mind.

Unemployment

It is much harder, however, to see what the summit has achieved in its principal area of concern, the international economic and monetary situation. Mr. Roy Jenkins, the Commission President, emerged from the meeting confident that important progress had been made towards greater monetary integration along the lines he first proposed last autumn. It is true that Heads of Government were apparently amenable to the idea of extending the use of a Community's unit of account to official settlements between member countries, giving it a limited reserve role. That could well be significant for longer term efforts to create a common or "parallel" currency. It is not, however, very relevant to today's problems. There seems, in fact, to have been considerable divergence of diagnosis.

VW starts pulling the Rabbits from its U.S. hat

BY JOHN WYLÉ IN NEW YORK

CHRYSLER Corporation did not want it, Herr Rudolph Leiding resigned because he could not have it, Governor Milton Shapp nearly lost it and more than 35,000 people cannot get a job in it. The path to Volkswagen's factory at New Stanton, Pennsylvania, has been littered with corporate battles, political rivalries and personal disappointments. But these will no doubt count for naught to-day, when a Volkswagen Rabbit rolls out of the first foreign-owned car manufacturing plant to be opened in the United States for more than 40 years.

The plant, originally intended for Chrysler, who abandoned construction on it before the half way stage in 1970, represents a \$300m. bid by VW to regain its former glory as the leading producer of foreign cars sold in the U.S. Japan's Toyota snatched this crown in 1975 when VW came in third behind Datsun. Last year, the West German company increased its year-on-year sales in the U.S. for the first time since 1970, but they were still less than half the 571,000 units sold in that peak year. Competition has undeniably sharpened among importers, but VW models which have been enthusiastically accepted by European car buyers have run into a recurrent marketing problem in the U.S., which is beyond the wit of any design engineer: the West German mark's upward march against the dollar. In eight years its value has risen from DM3.60 to the \$ to a shade over DM2.

But the New Stanton investment represents more than an attempt to shelter from the mark's strength. In a real way, it is a physical expression of VW's emergence as a world car producer ranking with, but on a smaller scale than, General Motors and Ford. The characteristic of a world company is that it produces in and for several major national markets a range of designs distinguished by standardisation of equipment and components.

VW's Rabbit, which is sold in Europe as the Golf, was planned to replace the legendary Beetle as a car which would sell successfully in any market. Whether it will ever attain the Beetle's selling power remains to be seen, but after a sticky launch in 1975 the Rabbit found 194,703 purchasers last year, giving it about 16 per cent of the total U.S. imported small car market.

But its fundamental problem was highlighted again just ten days ago when, for the fifth time in 12 months, VW had to announce a round of price increases because of the dollar's weakness. When it was launched the Rabbit was priced at \$2,999; to-day the cheapest version sells at \$4,220.

The implications of a currency

Career with Ford

Herr Leiding resigned in late 1974 and direction of VW was handed over to Herr Toni Schmucke, who until 1968 had spent his entire career with Ford Motor Company's West German subsidiary. In the intervening period he had consolidated a problem-solving reputation by leading the troubled steelmaker Rheinisch AG out of trouble and into a merger with the Thyssen group.

Herr Schmucke's inheritance at VW included a set of

memoranda detailing the course of preliminary conversations which had been held with both Chrysler and American Motors on the possibility of producing VW cars in either company's facilities—a concept which was embodied in the Renault-American Motors agreement ten days ago.

Herr Schmucke rapidly pushed through a plan to cut the VW workforce in West Germany by 25,000 (18,500 eventually) and then in May, 1975, publicly supported the notion that the only way to recapture the American market, which had once accounted for nearly a third of VW's output, was to produce cars there. During the next 11 months detailed analyses by VW executives produced the following arguments in favour of such a move:

Production in the U.S. would drastically reduce the com-



Volkswagen Manufacturing Corporation's chief financial officer, Mr. Friedrich Thomé, in front of the New Stanton works, which goes into Rabbit production to-day.

pany's exposure to further appreciation of the D-mark, although this would remain a factor because a major proportion of components would have to be shipped across the Atlantic for U.S. assembly. (Some 25-30 per cent of the first American Rabbits will be built with U.S. components and this will rise to 75 per cent by the end of 1979.) Production in the U.S. would also free VW from the effects of any protectionist movement and from anti-dumping complaints of the kind levelled against the company in 1975.

Competition from Japan was making the small car market increasingly tight: shorter lines of supply and capacity for superficial design modifications would give VW a competitive edge.

As regards unit costs and productivity, wage costs and fringe benefits in the U.S. and West Germany were broadly similar but they were rising more rapidly in West Germany, where car workers were also working about 30 fewer days per year. Labour was easier to shed in the U.S. during market recessions and the high-volume U.S. producers were extracting a significantly higher value per man than was VW in West Germany.

Tighter governmental regulation in the U.S. on safety, pollution and fuel economy could force the pace of technical innovation which might have spin-offs in other markets.

VW must also have assessed in detail the impact on its West German activities of building a U.S. plant with an annual capacity of 200,000 vehicles. The

Cleveland, Ohio, and a partially-built Chrysler Corporation plant at New Stanton, 35 miles south-east of Pittsburgh. Salomon, a major investment directly worth two to three times more in Ohio and Pennsylvania offered a range of inducements to tempt VW.

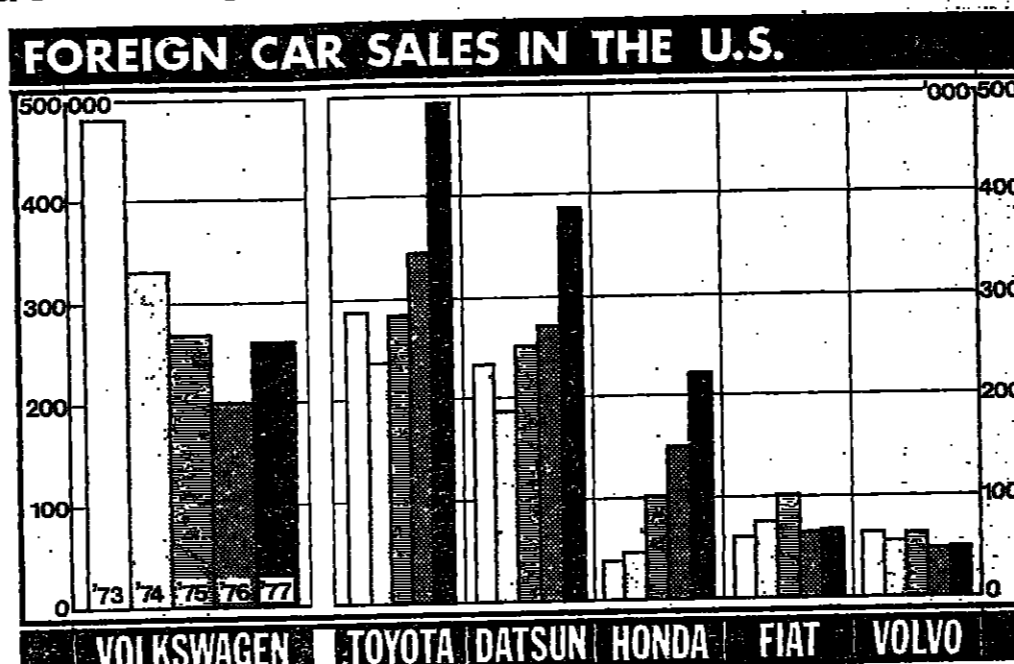
Pennsylvania and the attractions of a purpose-built factory "shell" won the day, but not before VW had raised the possibility of changing its mind and going to Ohio because Governor Milton Shapp of Pennsylvania could not get all the elements of his financial package into place. VW has ended up raising more than \$200m. itself through European bond issues. But it has also taken about \$40m. at extremely low rates of interest from two local Pennsylvania pension funds.

The period since the keys to the plant were handed over to VW on October 5, 1976, has witnessed impressive feats of organisation and cultural encounters of an occasionally bracing kind.

The 3.1m. square-foot facility housed a dirt floor and virtually little else 18 months ago. An office block has been constructed and road and railway links created. VW decided that the management of the Volkswagen Manufacturing Corporation would be largely American. Not least because it wanted to incorporate what it hoped would be the best U.S. production techniques into the VW system.

Overall responsibility was given to Mr. James W. McLernon, who was recruited by a firm of headhunters to be president and chief executive of the manufacturing company. Moving to VW ended a 29-year career with GM for Mr. McLernon, who had spent the seven years before his appointment in September, 1976, as general manufacturing manager for the Chevrolet division, which has 75,000 employees in 27 plants. The lure was not the five-year contract reportedly worth \$2m. but being in the creation of a corporation which Mr. McLernon believes will eventually encompass more than one U.S. assembly plant. His top management team includes former employees of all four of the Detroit car companies selected from more than 5,000 applications made by similarly qualified executives.

The Rabbit, in his New Stanton hutch, should be more secure.



FOREIGN CAR SALES IN THE U.S. (in thousands)

Herr Leiding could not carry his views on U.S. production through his supervisory Board, whose trade union representatives were becoming increasingly preoccupied with the need to save jobs in West Germany and would not consider anything which might mean "exporting" jobs to the U.S.

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More than one U.S. plant

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The Rabbit, in his New Stanton hutch, should be more secure.

MEN AND MATTERS

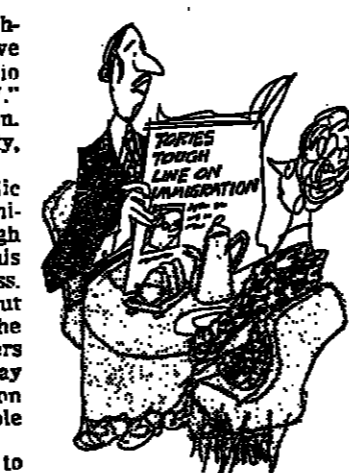
Sir Idwal's growing teeth

It will not be the easiest of weeks for Alex Atkinson, second permanent secretary at the Department of Health and Social Security. This Wednesday he is to face a Select Committee that oversees the work of the Ombudsman. The committee will be asking Atkinson some hard questions about a case in which DHSS civil servants have been accused of "deplorable deceit" and "improper behaviour." These charges were made by the Ombudsman, Sir Idwal Pugh, after investigating the complaints of a war-disabled colonel who for 23 years was denied his proper pension—as were a score more fellow-officers.

The fierceness of Sir Idwal's condemnation led to calls in the Commons for the resignation of Social Services Secretary David Ennals, who made do with a humble apology. It also shows how the present Ombudsman has raised this once-disparaged job to a different plane since he took it over in 1978. Yet, at first glance, Pugh does not seem a fire-eater.

He is slight and neat and has an informal approach that must put at ease the people bringing their complaints to him. Mentioning the future about over-charging for vehicle licences, he says with satisfaction: "I had quite a dingdong with the Transport Ministry." He won, of course. A lifelong civil servant himself, Sir Idwal has dispelled suspicions that the Ombudsman will never give bureaucrats anything worse than a gentle reproof. He has also come out from behind the deadening official title — Parliamentary Commissioner for Administration — devised when the job was created in 1967. Recently Pugh spread 40,000 posters, carrying the word "Ombudsman" in large type, around public libraries and similar places, telling the public about the machinery for complaining. "I've also been doing a lot on radio phone-ins and appearing on TV," he told me with satisfaction. "It's not a cult of personality, mind you."

As the law stands, the public can only complain about administrative ill-treatment through MPs. Sir Idwal thinks this should end, to give direct access. The select committee is about to start taking evidence on the way the Ombudsman's powers can be strengthened. It may well become a general election issue, related to the whole "open Government" debate.



"There's nothing racist about it — they just wouldn't want anyone to live here under a Labour Government."

Town Councillor Patricia Burnham told me that the town and district councils had refused to plan permission but that two years ago, after offering to pay for some roads and sewerage extensions, he won an appeal.

Clores has long allowed the public on to the 80 acres and one month ago he gave Thatcham sufficient land for a cricket pitch: two smaller areas are to follow.

Burnham says that if in the past people of Thatcham had been better educated and "more eloquent" they might have stopped "the absolute rape" of the green land. She is bitterly critical of another estate being built between a slaughterhouse, a rubbish dump and an expanding sewerage works. She adds: "What has happened in Thatcham is typical of the fate of small communities."

Is your pig pedigree or merely a run-of-the-sty hybrid? That is the smoking question of the moment in the piggeries of

Britain. The breeding companies have been exporting some 15,000 animals per year to France and West Germany alone, but suddenly in February a levy of £3 per trotter was imposed on all non-pedigree trade.

The Treaty of Rome has a clear bite of class distinction. Any pig which is not pedigree is classed as "animal for slaughter." But our breeders believe in "hybrid vigour" — that extra something which comes from crossing two breeds and which results in a hybrid being more lively and productive than a thoroughbred.

Breeders fume if you describe their hybrids as cross-bred, but are of course far more incensed by the imposition of the levy. Some exporters had avoided it by classing their animals as "hybrids for breeding" but the EEC, in tackling this, has clattered the whole hybrid trade. Now, with breeders already squealing that domestic margins are tight, the levy is going to add about 10 per cent to their costs. The Ministry of Agriculture offers tea and sympathy but warns that action may be impossible until the Nine agree on new rules. Which could take a pig's lifetime.

For all the disarray of the world, Dr. Kurt Waldheim is in fine fettle last week, recounting how his predecessor, U Thant, had once been greeted by a listener with the words "My dear Secretary General, what a perfectly superfluous speech!" U Thant, if not plussed was far from being nonplussed and was quick to reply "Thank you so much, madam. Do you think is should be published posthumously?" "Oh, yes sir," came the unblinking answer, "The sooner the better."

Observer

LOTHIAN

WE'VE A LOT TO OFFER. YOU'VE A LOT TO GAIN.

The Lothian Region, with Edinburgh at its heart, already has a formidable roll call of satisfied industrial customers. On industrial estates owned by the Lothian Regional Council there are now 147 thriving companies with 11,000 employees.

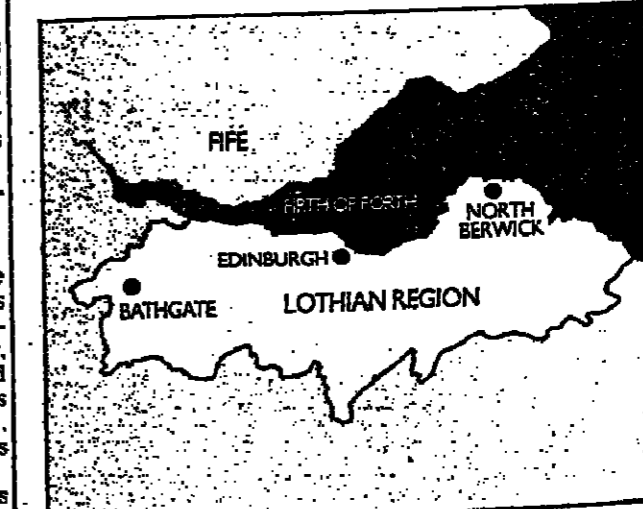
Outstanding among the reasons for the success of the Region's industrial estates is the quality of Lothian labour. The playback we receive from employers leaves us in no doubt that Lothian labour is very highly regarded, indeed.

Our access to good road, air, rail and sea communications is rivalled only by our access to commercial money. Edinburgh is one of Europe's foremost funding and investment centres.

For the businessman who can't wait we have immediately available 22 fully-serviced industrial sites, 10 modern factories and 16 of the latest warehouses. All ready for occupation — now.

Fly up and see us sometime. Soon. If you want to know more before you take off, call us.

Or write to: R. I. Shanks, Industrial Development Manager, Lothian Region Development Authority, 18 St Giles Street, Edinburgh EH1 1PT.



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FINANCIAL TIMES

Eurobond Quotations and Yields

AIBD

THE ASSOCIATION OF
INTERNATIONAL BOND DEALERS

At 31st MARCH, 1978

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—Sweden	18		
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—United Kingdom	18		
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Australian Dollars	18		
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The table of quotations and yields gives the latest rates available on 31st March, 1978.

This information is from reports from official and other sources which the Association of International Bond Dealers considers to be reliable, but adequate means of checking its accuracy are not available and the Association does not guarantee that the information it contains is accurate or complete.

All rates quoted are for indication purposes only and are not based on, nor are they intended to be used as a basis for, particular transactions. In quoting the rates the Association does not undertake that its members will trade in all the listed Eurobonds and the Association, its members and the Financial Times Limited do not accept any responsibility for errors in the table.

• The Association of International Bond Dealers (AIBD) compiles current market quotations and yields for Eurobond issues. These quotations and yields are published monthly by the Financial Times. The Association's prices and yields

are compiled from quotations obtained from market-makers on the last working day of each month: there is no single stock exchange for Eurobonds in the usually recognised sense—secondary market trading business is done on the telephone

between dealers scattered across the world's major financial centres. Membership of the AIBD (which was established in 1969), comprises over 450 institutions from about 27 countries. A key to the table is published opposite.

Eurobonds in March

BY MARY CAMPBELL, Euromarket Editor

March was an eventful month for the international bond markets. It started with the Swiss moves to cut back inflows of foreign funds into the Swiss franc, including Swiss franc foreign bonds, lived through the high hopes and subsequent disappointment over the German/U.S. pact to support the dollar, and ended with the sterling bonds falling through the floor and yen bonds in strong demand.

On top of this, almost every individual currency sector had its own excitement. In the dollar sector, the level of demand was tested for the first time really since last autumn with a big flow of new issues in mid-month. In Japan, not least because of the strength of the currency, there were cuts in interest rates which pushed down the level of foreign yen bond yields while institutional moves got under way, to open up the market a trifle more to foreign participation. The Swiss franc market was perhaps the most exciting with falls of several points recorded and the creation of a completely new yield level. In the D-mark sector a two-tier market almost developed as a result of investors' saturation with so-called "exotic" borrowers—particularly Latin American names—while several issues were brought to the market on terms which were too tight.

In the sterling market, the fall in the value of the currency against the dollar, together with saturation with new issues, produced a sharp tumble in secondary market prices at the close of the month. Despite all this apparent activity, most international interest rates and exchange rates ended the month hardly changed from the levels at the beginning of the month. Thus the three-month Eurodollar

rate on February 28, 7½ per cent, was also the rate on March 31. The dollar weakened somewhat during the month against both D-mark and Swiss franc, but not spectacularly. The main currency changes were in the rates for sterling and the yen: against the dollar, sterling fell by 4 per cent, from \$1.9415 to \$1.8830, while the yen rose 7 per cent, from ¥238 to ¥252½ per U.S. dollar.

In the dollar sector the events of March showed that good-quality borrowers can get a good investor response at the shorter maturities, but that there is not much demand for long maturities (except possibly in the United States—the key test issue there, a \$750m. three-tranche offering for Canada, was untested by a sharp deterioration in market conditions at the moment it started trading freely on the secondary market).

Thus a five-year Eurodollar bond issue

for Norway was increased in size from \$100m. to \$125m. during the offering period, while a four-year issue for Australia was raised from \$300m. to \$350m. Both (though particularly the Norwegian issue) traded satisfactorily in the after market.

Several long-term issues by contrast, admittedly mostly for less than top-quality names but including a two-tranche offering for the European Coal and Steel Community, were marked sharply down in the secondary market.

In the D-mark sector, there was good demand for top-quality names but an ever more embarrassing problem over the "exotics." The problem was exacerbated by the mispricing of a few issues—notably the DM200m. issue for the United Mexican States which started trading at a discount of more than two points. The outlook for this month is much better since issue managers are holding off these borrowers for the time being.

There was considerable confusion in the primary market in mid-month due partially to a revision of the calendar and a report that a French borrower would

be added following the "right" result in the French elections. However, the issue did not materialise.

In the Swiss franc market, a hiatus followed the introduction of the controls on capital flows limiting foreign investors to 35 per cent of issues (except those for some multinational institutions) and banning them from secondary market purchases of foreign bonds. As a result of this the coupon for a prime borrower on this market was more than half a point higher by the end of the month—4½ per cent—than it had been at the beginning—3½ per cent.

In the yen foreign bond market, fast emerging as a major sector of the international bond market, yields moved the other way and ended the month about 0.2 points lower than at the beginning.

One success of the month was the unit of account, now proving again a valuable source of funds. Two issues were launched in March. The first had its terms changed more than once in favour of the borrower due to good demand.

There was a similar experience in the Kuwaiti dinars.

NEW ISSUE

These Bonds have been sold outside New Zealand and the United States of America. This announcement appears as a matter of record only.

March, 1978

U.S. \$25,000,000

N.Z. Forest Products Limited

(Incorporated in New Zealand under the Companies Act 1933)

9 per cent. Bonds Due 1986

Kidder, Peabody International
LimitedLloyds Bank International
LimitedCommerzbank Aktiengesellschaft
LimitedCredit Suisse White Weld
Limited

Deutsche Bank Aktiengesellschaft

N.Z. FOREST PRODUCTS LIMITED

U.S. \$ 50,000,000

medium term loan

managed by

LLOYDS BANK INTERNATIONAL LIMITED

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COMMERZBANK AKTIENGESSELLSCHAFT

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LBI FINANCE (HONG KONG) LIMITED

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The Arab and Morgan Grenfell Finance Company	Arnhold and S. Bleichroeder, Inc.	Bache Halsey Stuart Shields	
Banca Commerciale Italiana	Banca del Gottardo	Banca Nazionale del Lavoro	Banca della Svizzera Italiana
Bank of America International	Bank Julius Baer International	Bank of Credit and Commerce International	
Bank Gutzwiller, Kurz, Bungezer (Overseas)	Bank Mees & Hope NV	Bankers Trust International	
Banque Arabe et Internationale d'Investissement (B.A.I.I.)		Banque Bruxelles Lambert S.A.	
Banque Française du Commerce Extérieur	Banque Générale du Luxembourg S.A.	Banque de l'Indochine et de Suez	
Banque Internationale à Luxembourg S.A.	Banque Nationale de Paris	Banque de Neufville, Schlumberger, Mallet	
Banque Pariente	Banque de Paris et des Pays-Bas	Banque de Paris et des Pays-Bas (Suisse) S.A.	Banque Privée S.A.
Banque Rothschild	Banque de l'Union Européenne	Banque Worms	Baring Brothers & Co.,
Bayerische Landesbank Girozentrale	Berliner Handels- und Frankfurter Bank		Blyth Eastman Dillon & Co.
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Crédit Industriel et Commercial	Crédit Lyonnais	Crédit du Nord	Creditanstalt-Bankverein
DBS—Daiwa Securities	Delbrück & Co.	Deutsche Girozentrale	The Development Bank of Singapore
Dillon, Read Overseas Corporation	Dresdner Bank	Dresdel Burnham Lambert	Effectenbank-Warburg
Eurogest S.p.A.	European Banking Company		First Boston (Europe)
First Chicago Asia Merchant Bank Ltd.	Robert Fleming & Co.	Genossenschaftliche Zentralbank AG	
Girozentrale und Bank der Österreichischen Sparkassen	Goldman Sachs International Corp.	Hambros Bank	
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Istituto Bancario San Paolo di Torino	Jardine Fleming & Company	Kipeco Finance S.A.	Kitcat & Aitken
Kleinwort, Benson	Kreditbank N.V.	Kreditbank S.A. Luxembourg	Kuwait Financial Centre (S.A.K.)
Kuhn Loeb Lehman Brothers International		Kuwait Foreign Trading Contracting & Investment Co. (S.A.K.)	
Kuwait International Investment Co. s.a.k.	Lazard Frères & Co.,	Manufacturers Hanover	
Merrill Lynch International & Co.	B. Metzler seed. Sohn & Co.	Mitsubishi Bank (Europe) S.A.	Samuel Montagu & Co.
Morgan Grenfell & Co.	Morgan Stanley International	Nesbitt, Thomson	Nomura Europe N.V.
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Trade Development Bank	Union Bank of Switzerland (Securities)	Union de Banques Arabes et Françaises—U.B.A.F.	
United Overseas Bank Limited, Singapore	Vereins- und Westbank	M. M. Warburg-Brinckmann, Wirtz & Co.	
S. G. Warburg & Co. Ltd.	Wardley	Westdeutsche Landesbank	Williams, Glyn & Co.
		Girozentrale	Wood Gundy

ISSUED/ ESTIMATED OY (MCD)	YEAR OF ISSUE/ ISSUE PRICE	BORROWER/ COUPON MATURITY	PRICE	YIELD/ YIELD TO MATURITY	CURRENT YIELD	YIELD TO NEXT CALL/ NEXT CALL PRICE	CALL NOTICE (DAYS)/ NEXT CALL DATE	AMOUNT NEXT PAYMENT	REDEMPTION FIRST PAYMENT	REDEMPTION RECALL DATE	LEAD MANAGER	MARKET MAKERS
US BONDS-CANADA (OVERSEAS)												
75.00	1975	CITY OF MONTREAL	102	8.30	9.05	9.39					80 NY	488 531
75.00	1975	9.25 15/7/1980									NY	
75.00	1970	CITY OF OTTAWA	99 3/8	6.00	9.32	9.34		300	46	29.70	320 10	985 880
75.00	1975	9.25 15/7/1980		3.45	9.34	101.00	1979	1971	1.00			
75.00	1970	CITY OF MONTREAL	99 5/8	3.50	8.50	8.28					99	418 980
75.00	1975	8.25 30/9/1980									11	
75.00	1976	CITY OF MONTREAL	102 1/8	10.50	8.81	9.78	9.28	45	30	29.70	320 10	985 880
75.00	1975	8.25 15/7/1980									11	
75.00	1977	CITY OF MONTREAL	98 3/8	9.25	8.94	8.58					99	418 980
75.00	1975	8.25 15/7/1980									11	
75.00	1977	CONSTRUCTION - MONTREAL	103 7/8	14.50	9.52	10.30		30	1.00	29.70	320 10	985 880
75.00	1975	8.25 15/7/1980									11	
75.00	1975	CANADA	103 3/8	9.40	8.76	9.65		30	1.00	29.70	320 10	985 880
75.00	1975	9.50 10.00 15/11/1981									11	
75.00	1977	GRAND LAKES BAY	99 7/8	5.92	8.54	8.53	9.02	30	1.00	29.70	320 10	985 880
75.00	1975	8.25 15/7/1980									11	
75.00	1975	HOCK OIL	102 1/4	5.25	9.09	9.08		100.00	1982	1982	1.00	
75.00	1975	9.50 10.00 15/11/1981									11	
75.00	1975	9.50 10.00 15/11/1981									11	
75.00	1977	TRICO	97 1/8	6.71	8.62	8.49	9.20	30	1.00	29.70	320 10	985 880
75.00	1975	8.25 15/7/1980									11	
75.00	1977	TRICO	97 1/8	14.71	9.36	9.27	9.70	30	2.00	29.70	320 10	985 880
75.00	1975	8.25 15/7/1980									11	
75.00	1975	THE CANADIAN PACIFIC	102 1/8	4.08	8.32	8.00	8.14	30	1.00	29.70	320 10	985 880
75.00	1975	8.25 15/7/1980									11	
75.00	1975	THE CANADIAN PACIFIC	104	8.08	8.78	9.13	8.20	30	1.00	29.70	320 10	985 880
75.00	1975	8.25 15/7/1980									11	
75.00	1977	MONTREAL	96 3/4	12.84	9.42	9.30		1.00	1.00	29.70	320 10	985 880
75.00	1975	8.25 15/7/1980									11	
75.00	1977	MONTREAL	97 1/8	11.12	9.48	9.34		100.00	1984	1984	1.00	
75.00	1975	8.25 15/7/1980									11	
75.00	1977	MONTREAL	97 1/8	11.12	9.48	9.34		100.00	1984	1984	1.00	
75.00	1975	8.25 15/7/198										

[illegible]

ISSUED, ESTIMATED DOLLARS (MID)	YEAR COMPLETION YEAR OFFERED ISSUE PRICE	BORROWER/ COUPON MATURITY	PRICE	LIFE/ AVERAGE LIFE YIELD TO MATURITY/ YIELD TO AVERAGE CURRENT YIELD	YIELD TO NEXT CALL/ NEXT CALL PRICE	CALL NOTICE (DAYS)/ NEXT CALL DATE	PIBES AMOUNT PIBES AMOUNT	SECURITY SECURITY (WARRANTS/ LISTING)	LEAD MANAGER	MARKET MAKERS
IS DOLLARS-JAPAN (CONTINUED)										
15.00	1975 STIPES BOND 99-25 8.15 15/ 8/1980	102	2.38	8.25 9.07				MC	35	913 905 920 941
25.00	1963 WIPON TEL & TEL 3-16 99-25 8.15 15/ 8/1978 S	99 1/4	2.19	8.56 5.28	100.00	1978	3-16	MC	35	913 905 941 973
25.00	1963 WIPON TEL & TEL 6-21 99-25 8.15 15/ 8/1978 S	98 3/4	2.04	8.51 5.21	100.00	1978	3-16	MC	35	913 905 941 973
100.00	1977 WIPON TEL & TEL 100-00 99-25 8.15 15/ 8/1982 S	98 1/2	3.22	8.24 7.89	100.00	1978	3-16	MC	35	913 905 941 973
150.00	1979 WIPON TEL & TEL 100-00 99-25 8.15 15/ 8/1984 S	97 3/4	6.21	8.38 8.09	8.16 30	100.00 1983		MC	35	913 905 941 973
100.00	1976 WIPON TEL & TEL 98-30 8.75 15/ 5/1981 S	99 7/8	3.08	8.07 8.04				MC	35	913 905 941 973
50.00	1977 WIPON TEL & TEL 99-25 8.125 15/ 3/1987 S	98	8.82	8.27 8.46	8.69 30	100.00 1985		MC	35	913 905 941 973
50.00	1975 WIPON TEL 100-00 9.50 15/ 9/1980	101 3/4	2.46	8.63 9.34	6.41 30	100.00 1978		MC	35	913 905 941 973
20.00	1975 WIPON TEL 99-25 8.25 15/ 8/1980	102	2.34	8.23 8.07				MC	35	913 905 941 973
20.00	1976 WIPON TEL 100-00 8.25 15/ 3/1981	102	2.84	8.41 9.07				MC	35	913 905 941 973
22.00	1976 WIPON TEL 99-25 8.75 15/ 7/1981	101 1/4	3.29	8.27 8.64				MC	35	913 905 941 973
45.00	1976 OKI ELECTRIC 100-00 8.25 15/11/1981	97 1/2	3.63	8.18 8.24				MC	35	913 905 941 973
20.00	1976 OKI ELECTRIC 99-25 8.25 15/12/1981	97 1/2	3.71	8.21 8.46				MC	35	913 905 941 973
20.00	1977 OKI ELECTRIC 99-25 8.25 15/12/1981	96 3/4	6.61	8.90 8.50	10.01 45	100.00 1980		MC	35	913 905 941 973
12.00	1976 OKI ELECTRIC 100-00 8.25 15/12/1981	97 1/2	5.88	9.03 9.57				MC	35	913 905 941 973
20.00	1976 OKI ELECTRIC 99-25 8.25 15/12/1981	97 1/2	3.12	8.47 8.88	8.25 30	100.00 1978		MC	35	913 905 941 973
11.00	1976 OKI ELECTRIC 99-25 8.25 15/12/1981	97 1/2	6.73	8.53 8.63				MC	35	913 905 941 973
2.00	1976 OKI ELECTRIC 99-25 8.25 15/12/1981	97 1/2	9.24	8.67 8.86				MC	35	913 905 941 973
20.00	1977 OKI ELECTRIC 99-25 8.25 15/12/1981	97 1/2	3.79	8.42 8.14	9.51 30	100.00 1982		MC	35	913 905 941 973
15.00	1977 OKI ELECTRIC 99-25 8.25 15/12/1981	97 1/2	6.67	8.73 9.35				MC	35	913 905 941 973
22.50	1964 THE NIPPON KAI 99-25 8.25 15/ 8/1978	98 3/4	1.04	7.14 5.91				MC	35	913 905 941 973
20.00	1965 THE NIPPON KAI 7-20 99-25 8.25 15/ 8/1978	98 3/4	1.21	6.85 5.48				MC	35	913 905 941 973
20.00	1965 THE NIPPON KAI 99-25 8.25 15/ 8/1978	98 3/4	1.21	6.85 5.48				MC	35	913 905 941 973
20.00	1965 THE NIPPON KAI 99-25 8.25 15/ 8/1978	98 3/4	1.21	6.85 5.48				MC	35	913 905 941 973
15.00	1975 OKI ELECTRIC 100-00 8.25 15/12/1981	97 1/2	3.12	8.47 8.88	8.25 30	100.00 1978		MC	35	913 905 941 973
15.00	197									

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains.

\$25,000,000

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Acting through its Panama Branch

MITSUBISHI BANK (EUROPE) S.A.
REFSA LIMITED

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...and the other is the fact that the system is not designed to handle the complexity of the problem.

1. *Journal of the American Medical Association*, 1990; 263: 1033-1036.

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ISSUED/ ESTIMATED \$ (MIO)	YEAR OF ISSUE	BORROWER/ COUPON MATURITY	BOND PRICE	CURRENT BOND YIELD	CURRENT SHARE YIELD	YIELD TO MATURITY	YIELD TO REST/CALL	RECALL PRICE	CALL NOTICE (MONTHS)	PREMIUM/DISCOUNT	CONVERSION PRICE	CONVERSION START	DELIVERY	SECURITY	MANAGER	MARKET
						P.E.R.										
CONVERTIBLES—FRANCE																
100.00	1977	GEVRETS BAKERY	FF 71 3/4	6.97	9.79				60	1967	150.77	171.90	FF 127	FF 277	FF 219	219
100.00	1980	12/7 61/981	413.1	9.11					105.00	1978	1978	1/19/78	12	FF 860	FF 975	975
50.00	1979	KICHELMIT INTL	120 7/8	6.58	1.21				60	1978	1978	9/21/78	FF 12	FF 305	FF 305	305
37.00	1980	6/30 5/11/985	120 7/8	6.58	1.21				105.00	1978	1978	1/19/78	FF 12	FF 315	FF 315	315
30.00	1970	HUEZ ET	25 1/2	7.41					135.44	1978	1978	6/19/70	ANNEAU	FF 515	FF 515	515
30.00	80-50	6/30 1/5/1985	25 1/2	9.63					100.00	1978	1978	6/19/70	ANNEAU	FF 515	FF 515	515
CONVERTIBLES—GROSS RING																
50.00	1979	ACTIA BARGAINING	60	10.33	13.70				60	1978	44-32	FF 1	FF 150	FF 915	FF 915	915
10.00	1980	5/25 3/1/1983	60	12.57	31.20	130.50			1978			1/1/1978	13	FF 915	FF 915	915
CONVERTIBLES—ISRAEL																
10.00	1979	LEHNI INTL	97	7.22	7.61				30	1978	12-22	13	FF 23	FF 23	23	23
10.00	1980	7/00 1/1/1984	97	4.29		100.00			1980			1/1/1978	13	FF 23	FF 23	23
CONVERTIBLES—JAPAN																
30.00	1975	ASAMI CHEMICAL	1 13/4	4.72	3.00				30	1978	3-44	YEN 140.2	80	YEN 609	YEN 609	609
100.00	1980	6/25 3/1/1990	2 1/2	5.32					100.00	1979		1/1/1977	14	YEN 501	YEN 501	501
100.00	1980	1977 ASAMI CHEMICAL	910 1/2	6.27	4.84				100.00	1979	4-27	YEN 137	80	YEN 501	YEN 501	501
10.00	1980	6/25 3/1/1992	4.01	1.46					100.00	1979		1/1/1977	14	YEN 501	YEN 501	501
15.00	1971	DAL NIPPON PRINTING	647 1/2	5.32					30	1978	3-44	YEN 137	80	YEN 399	YEN 315	320
10.00	1980	6/25 3/1/1986	5	5.32					100.00	1979		1/1/1977	14	YEN 399	YEN 315	320
20.00	1976	DAIICHI KEN	717 3/8	5.18	4.33				100.00	1979	1-25	YEN 137	80	YEN 418	YEN 418	418
26.70	1980	6/25 3/1/1991	5	9.40					100.00	1979		1/1/1977	14	YEN 418	YEN 418	418
10.00	1976	KANDA RIKKO INDUSTRY	208 3/8	6.40					100.00	1979	1-25	YEN 137	80	YEN 519	YEN 519	519
10.00	1980	6/25 3/1/1991	5	9.40					100.00	1979		1/1/1977	14	YEN 519	YEN 519	519
10.00	1980	HYUNDAI INTL	410 3/4	5.39	1.34				100.00	1979	3-44	YEN 137	80	YEN 519	YEN 519	519
10.00	1980	6/25 3/1/1991	239	2.51					100.00	1979		1/1/1977	14	YEN 519	YEN 519	519
30.00	1979	KIHOCHI LTD	2 3/8	5.29	6.21				100.00	1978		1/1/1977	14	YEN 519	YEN 519	519
10.00	1979	ROBBERY ELECTRIC WORKS	113	5.72	3.16	82.76			30	1978	7-04	YEN 251	80	YEN 396	YEN 315	320
10.00	1980	6/25 3/1/1992	432	1.46					100.00	1979		1/1/1977	14			

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**Specialising in
Japanese Straight and Convertible Eurobonds**

April 78	Current	Yield	6 April
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STRAIGHT BONDS			6 April 78		Current Yield		Yield Maturity		CONVERTIBLE BONDS			6 April 78		Current Yield		Con. Premium	
(U.S. Dollars)			Bid	Offer					(U.S. Dollars)			Bid	Offer	Parity			
Asahi Chem.	104	1840	105	105	9.73	7.47	Asahi Chemical	61	1900	134	135	138.5	4.65			-1.5	
Bank of Tokyo	7	1890	954	961	7.95	8.50	Asahi Optical	6	1982	116	117	118.8	5.15			-1.9	
C. Itoh	8	1881	1015	1021	8.57	7.92	Dai'ei	6	1991	125	126	123.4	4.78			1.7	
Denki Kagaku	7	1882	961	971	8.00	8.67	Ito-Yokado	6	1992	126	127	115.4	4.74			9.6	
Hitachi Zosen	7	1884	954	961	8.03	8.65	Jusco	6	1992	122	123	117.4	4.90			4.3	
I.H.I.	7	1882	971	971	7.96	8.51	Kao Soap	8	1992	1294	1304	131.6	4.62			-1.2	
Kajima	7	1882	961	971	7.87	8.88	Komatsumi	7	1990	129	130	130.9	5.80			2.1	
Komagi Gumi	7	1882	961	971	8.00	8.70	Kubota	6	1991	1194	1204	123.2	5.64			-1.8	
Marubeni	9	1882	1021	1031	8.48	8.83	Maruji	6	1991	153	155	155.5	4.23			-1.3	
Mitsui Eng.	9	1883	991	1001	8.83	8.70	Matsumoto	6	1990	168	168	161.9	4.21			0.9	
Mitsui O.S.K.	9	1884	101	1011	9.37	8.75	Mitsubishi Corp.	6	1991	154	155	136.1	4.95			-0.1	
Mitsui Petrochem	8	1884	961	971	8.24	8.61	Mitsubishi Heavy	6	1991	1291	1271	127.1	5.12			0.1	
MOI	7	1884	944	951	8.17	8.81	Mitsui & Co.	7	1990	137	138	137.0	5.27			0.4	
Nippon Mining	7	1882	961	971	8.02	8.75	Mitsui Real Est.	6	1992	1504	1514	149.1	3.97			1.3	
Nippon Steel	9	1890	1011	1021	9.30	8.53	Ricoh	6	1991	168	—	164.4	3.72			2.2	
N.Y.K.	8	1881	1001	1011	8.67	8.36	Sanyo	6	1991	1311	1321	134.9	4.73			-2.2	
Orient Leasing	8	1884	961	971	8.49	8.81	Sumitomo Elec.	6	1992	1471	1481	146.9	4.08			0.6	
Showa Line	9	1881	1011	1021	8.98	8.32	Tokyu Dept.	6	1992	131	133	128.1	4.55			3.0	
Sumitomo Heavy	7	1884	951	951	8.15	8.76	Toshiba	6	1990	1621	1631	163.3	4.13			-0.1	
Toray	7	1884	961	971	8.02	8.80	Toshiba	6	1992	137	138	137.1	4.55			0.3	
Toray Kanetsu	7	1882	961	971	7.98	8.67	(Deutsche Marks)										
Toyo Menka	7	1882	961	971	8.00	8.67	Asahi Glass	61	1986	119	120	122.9	5.23			-2.3	
Y.S. Line	7	1884	954	961	8.08	8.63	Canon	43	1980	1104	1114	83.3	2.29			18.7	
(Deutsche Marks)							Sanjo Paper	51	1987	1001	1104	96.5	3.23			15.5	
Asian Dev. Bank	7	1885	1061	1067	6.56	5.81	Komatsumi	5	1987	1081	110	90.1	5.47			21.0	
Kobe City	6	1987	107	1074	6.05	5.43	Minolta Camera	5	1987	134	125	126.9	4.62			-1.9	
Nippon Kokan	9	1882	105	106	8.53	7.36	Sekisui Prefab.	61	1987	1151	1161	112.9	5.39			2.7	
							Tokyo Sanyo	43	1983	1331	1341	139.8	3.54			-4.1	

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Reuters Monitor: SFB4-B
AIBD Market Maker No. 962

Telephone: 01-606 5645
Telex: 8811043 SUMFIN C

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The interest rates per annum applicable to the following US\$ Floating Rate Note Issues were announced during March. These rates are quoted for information purposes only, and should be confirmed prior to the execution of a specific transaction. The rates quoted apply to the six-month periods shown.

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JAPANESE DOLLAR QUOTED SECURITIES

WestLB Euro-Deutschmarkbond Quotations

Issue	Middle Price	Current Yield	Life*	Yield to Maturity	Remarks D—mandatory drawing for 10 year S—Sinking fund
61% Shell, Inc. 72/87	105.60	6.16	4.83	5.16	1. 478—87S
61% Shell, Inc. 77/89	110.00	6.14	8.78	5.29	1. 235—89D
81% Ship Co. N. Zealand 75/80 (P/G)	106.00	7.78	2.17	5.24	3. 630
81% Ship. Co. N. Zealand 75/82 IP (G)	105.75	8.04	4.14	6.85	22. 582
71% Ship Co. N. Zealand 75/82 IP (G)	105.75	8.04	4.14	6.85	22. 582
71% Siemens Europe 66/81	104.50	6.70	2.06	4.63	1. 1170—81S
71% Singapore 72/82	103.75	6.75	2.20	5.24	1. 778—82S
71% Singapore 77/83	103.20	6.30	5.08	5.75	1. 583
81% Singapore Air. 76/83 (G)	106.25	8.24	2.77	6.21	1. 279—83D
71% S.N.E.C. 68/83 (G)	103.75	8.19	4.02	7.54	1. 676—83D
71% Soc. Dev. Reg. 74/86 (G)	105.50	6.19	2.93	4.62	1. 1072—83S
71% Soc. Dev. Reg. 77/82P (G)	105.85	7.02	2.25	5.94	1. 480—86D
91% Soc. Mar. Fin. 75/83P	107.50	8.37	3.28	6.38	16. 123—92D
81% South-Africa 69/84	98.60	6.85	6.00	7.16	1. 473—84S
81% South-Africa 70/85	102.85	8.26	3.89	7.78	1. 1176—85S
71% South-Africa 71/86	102.00	7.60	4.54	7.35	1. 1177—86S
81% South-Africa 72/87	97.40	7.19	9.58	7.38	1. 1178—87S
71% South-Africa 72/87 78/81P (G)	101.50	7.92	2.92	7.60	1. 381
71% South-Africa 73/88 (G)	100.50	7.38	10.17	7.65	1. 679—88S
91% South-Africa 74/89 75/80P (G)	102.50	9.02	2.25	6.40	1. 780
91% South-Africa 74/89 75/80 (G)	105.75	8.75	2.25	6.40	1. 780
81% South-Africa 74/89 77/80P (G)	101.00	8.17	2.33	7.73	1. 879—80D
71% South Scot. Bk. 73/88 (G)	105.85	6.61	5.11	5.64	1. 279—88S
61% Spain 77/84	102.00	6.62	6.33	6.35	1. 884
61% State Chart. Bank 78/88	102.25	6.36	9.75	6.18	1. 188
61% Statof. 77/85	102.50	6.70	5.58	5.99	1. 382—85D
100% Stetelmark 74/88	110.00	5.99	1.43	6.80	1. 1090
81% Stockholm City 75/87	107.90	8.11	3.86	3.38	15. 438—83D
81% Stockholm County 75/87	110.30	7.93	4.80	6.20	1. 479—87D
71% Studeb. Worth. 69/79	104.25	6.95	1.33	3.98	1. 879
81% Sumitomo Metal 75/82	110.50	7.69	4.28	5.64	1. 782
71% Sun Oil Int. Fin. 73/88	105.75	7.09	5.58	6.24	1. 879—88S
71% Svenska Cell 73/88	102.50	7.00	5.08	6.41	1. 279—88S
61% Svenska Tänd. 75/82	102.00	6.69	4.14	6.80	1. 378—85S
61% Sweriges Inv. Bk. 72/87	104.75	6.44	4.74	5.58	1. 378—87S
71% Sweriges Inv. Bk. 73/88	106.25	6.59	5.19	5.58	1. 379—88S
71% Sweriges Inv. Bk. 75/83	106.00	8.02	3.63	6.57	1. 680—83S
61% Sweden 77/84	106.60	6.10	6.08	5.20	1. 584
61% Sweden 77/89	102.25	5.87	11.67	5.73	1. 1232—89S
61% Sweden 75/80P	106.50	8.72	1.96	5.88	16. 380
100% Taisan Corp. 74/87P (G)	100.50	6.29	2.50	5.29	1. 1079
71% Taisan Corp. 75/82 (G)	113.00	8.41	3.25	5.05	1. 781
91% Taisan Corp. 75/82P (G)	110.75	8.13	3.92	5.84	1. 382
91% Taisan Corp. 76/83 (G)	110.00	8.18	4.52	6.55	1. 383
51% Taisan Corp. 78/83 (G)	100.40	5.48	10.28	5.45	1. 484—83S
71% Taisan Corp. 78/83 (G)	105.00	6.67	2.78	5.11	1. 274—83D
71% Taisan Corp. 78/83 (G)	103.40	6.29	2.84	5.26	1. 974—83S
61% Taisan Corp. 79/83	103.00	7.44	9.68	6.83	1. 1182—93S
61% Taisan Corp. 79/83	103.00	7.44	9.68	6.83	1. 1182—93S
61% Thyssen Car. Fin. 75/82P	108.50	7.83	4.00	6.04	1. 482
61% Thyssen Car. Fin. 75/82P	108.00	7.64	4.25	6.05	1. 782
61% Thyssen Inv. 66/81	104.75	6.21	1.90	3.86	1. 372—81D
71% Tokyo El. Power 69/84	106.00	6.84			

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- to average life in case of a sinking fund issue, whenever the quoted price is above 100
- to average life in case the bond issue provides for mandatory drawing by lot at par only

P Private Placement (the smallest denomination may be larger than the usual DM 1,000)

G Government Guaranty

The following funds include Eurobond issues within their portfolios

**Quotations & Yields as at
31st March, 1978**

SOCIETE GENERAL De BANQUE
BANQUE GENERALE Du LUXEMBOURG

Fund	Price	First Issue Price	Yield %	Div. Date
Rentinvest	LuxFr 848	LuxFr 1000	8.39	21 Nov. (1983)
Capital Rentinvest	LuxFr 1306	LuxFr 1000	(Capitalisation)	
	1977/78		1975/78	
	High	Low	High	Low
Rentinvest	LuxFr 917	Lux 839	LuxFr 917	LuxFr 811
Capital Rentinvest	LuxFr 1309	LuxFr 1199	LuxFr 1309	LuxFr 945

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483-Smith Barney & Co.
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501-Yamaichi Securities
510-Salomon Brothers International Ltd.
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517-Credit Suisse-White Weld Ltd.
519-Arab Finance Corp.
525-Banque Arabe et Int. d'Invest
534-Leob, Rhoades International Ltd.
555-Goldman Sachs & Co. Inc.
556-Jardine Fleming International Inc.
560-Jardine Fleming International Ltd.
585-B.A.I.I. (M/E) Inc.
588-Bank Hapoalim
594-Indo-Suez & Morgan Grenfell
(Singapore)
599-Swiss Bank Corp. (Lux.)
600-First Boston AG
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Selected Austrian Schilling Bonds
of Austrian issuers
maturity up to 5 years

	Middle Price	Average Life	Yield to average life	Current Yield	Redemption (mandatory drawings by lot)
8 % Österreich 1973/B/81	100,—	1,87	8,50	8,00	15. 2.77-81 at 101,0
8 % Österreich 1973/III/B/82	100,56	2,63	8,66	7,96	20.11.74-82 at 102,5 to 102,5
8 1/2% Österreich 1974/III/B/82	100,—	2,55	8,46	8,50	22.10.75-82 at 100,0
8 1/2% Österreich 1975/S/83	101,—	2,92	8,41	8,42	5. 3.76-83 at 100,0 to 101,0
8 1/2% Innsbruck 1974/B/82	100,25	2,63	8,53	8,48	19.11.75-82 at 100,5
8 1/2% Kärnten 1975/B/81	101,—	1,93	8,56	8,42	7. 3.78-81 at 101,0 to 101,5
8 1/2% NEWAG 1975/B/82	101,—	2,18	8,61	8,42	6. 6.78-82 at 101,5

maturity over 5 years

8 1/2% Österreich 1975/S/III/85	102,25	4,65	8,51	8,31	27.11.79-85 at 103,0 to 103,5
8 1/2% Österreich 1976/S/86	101,50	5,38	8,57	8,37	20. 2.81-86 at 101,5 to 104,0
8 1/2% Wien 1974/B/84	99,75	3,25	8,57	8,52	2. 7.75-84 at 100,0
8 % CA-BV 1977/B/85	98,50	5,50	8,35	8,12	1. 4.82-85 at 100,0
8 1/2% Energie 1975/III/B + S/85	102,25	4,57	8,53	8,31	29.10.79-85 at 103,5
8 1/2% Sempert 1975/B/84	101,25	3,21	8,48	8,40	18. 6.76-84 at 101,0 to 103,0
8 1/2% Steyr-Daimler-Puch 1976/B/86	102,25	5,43	8,52	8,31	9. 3.81-86 at 103,0 to 104,0
8 1/2% VÖEST-Alpine 1975/B/84	101,—	3,45	8,69	8,42	16. 9.77-84 at 102,0 to 103,0

Selected US-\$ Bonds of Austrian issuers

5 3/4% Voest 63/78	6 % Rep. of Austria 64/84
5 3/4% Alpine Montan 65/85	6 3/4% Rep. of Austria 67/82
6 5/8% Austrian Electricity 66/86	8 3/4% Rep. of Austria 76/90
6 3/4% Austrian Electricity 67/82	8 1/4% Tauernautobahn 77/87
9 1/2% Österreichische Kontrollbank 74/79 in Austrian Schilling (traded in US-\$ only)	

Interest is payable without deduction for or on account of Austrian taxes.
For current prices and further information please contact:
For Austrian Schilling Bonds: Robert Jekl, Robert Wasinger
(Telephone: 6622/1701 or 1707, Telex: 74261-63)
For International Bonds: Walter Vogl (Telephone: 6622/2222, Telex: 76948)
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Creditanstalt-Bankverein
Schottengasse 6, A 1010, Vienna.

SNP gets chance to show its teeth

THE 50,000 voters of the Garscadden constituency on the north-western boundary of Glasgow will bear a heavier responsibility than merely choosing their MP on Thursday. By some freak of fate, Scotland has missed its statistical share of by-elections since 1974, so the contest will be the first real test of political opinion. The question in the ballot paper is not "Which party do you vote for?" but rather "Have the Scottish Nationalists passed their peak or are they still on the march that will make them Britain's third largest party at the next general election?"

The Scottish National Party candidate, Mr. Keith Bovey, 50, missed 7,800 votes behind the late Mr. William Small, who held the seat for Labour last time. He needs a swing of 10 per cent to take the seat and it is a measure of the current state of Scottish politics and the record of success that the SNP has won itself in the last ten years that not only is that figure highly possible but Mr. Bovey's boast that he will win with a 5,000 majority is not entirely in the realms of fantasy. It would be an unlikely result, but not impossible one.

Since 1974 when the Nationalists increased their parliamentary representation from two to 11, their party has been concentrating more and more on the industrial west of Scotland, made most of its first advances at the expense of the Tories in the east, but leading members soon realised that these easy victories would not be enough. Even if it were to take every Conservative seat in Scotland, the SNP could not reach the magical 36 MPs: the majority of Scottish seats and the number it needs before it

believes it has a mandate to negotiate for independence. It has used the last four years to build up its strength in the west, where Labour still reigns supreme.

So it is in the west that the big clash will come at the General Election. A simple swing from Labour to the SNP of merely 5 per cent would double the number of Nationalists at Westminster. A swing of 10 per cent would not only capture Garscadden; another 23 seats are also likely to fall.

In fact Scotland now faces not one, but two, by-elections; a second poll is pending in the steel-making town of Hamilton, Lanarkshire, following the death of the Labour MP, Mr. Alec Wilson last month.

Labour will not start to think about the fight there until Garscadden is over and done, but the Nationalists already have their candidate, Mrs. Margo MacDonald, senior vice-chairman of the party, a seasoned campaigner and a very popular personality. With a majority of only 3,300 standing in her way and the identification of Hamilton as the seat that started the Nationalist revival with the 1967 by-election, it is likely that Mrs. MacDonald will repeat the pattern of 1973 when she won a by-election at Govan, and be returned to Westminster within months of a General Election.

But back to Garscadden. The constituency is typical of many in the West of Scotland in its make-up and its politics. Like many parliamentary divisions, the name only exists during election campaigns. At other times the individual housing estates

have separate identities and, although 90 per cent of the homes are council-owned, they have distinct characters. The older houses of Knightswood and Blairdrie—many pre-war, but freshly painted—are roomy and comfortable. Bay windows and mature gardens give the district a pleasant appeal. There is little evidence of vandalism here and it is no surprise that the area is classed as "high amenity" in council jargon and much sought after in housing exchanges within the city.

There is no such competition for Drumchapel or York, newer estates that reflect the squeeze on public spending of the late 1960s and 1970s. Drab rows of mean terraced houses and high-rise blocks are only brightened by spray-painted graffiti; many families refuse accommodation, despite the long waiting list in Glasgow, and the city council resorts to placing those who have no choice in other areas. Single parent families are common and their plight is often acute. There are few vacant jobs locally, particularly for women with children to collect from school, and bus fares for the seven or eight miles to the city centre are expensive.

Although Labour held Garscadden in 1974, the rise of the SNP between the two elections has been meteoric, displacing the Conservatives from second place and taking nearly 5,000 additional votes in the meantime. The collapse of Tory support mirrored what was happening all over Glasgow. Since then the SNP Constituency Party has been constantly active, weaning life-long Labour supporters and their children away from the traditional loyalty. The first fruits of this effort came in the

May district council elections last year when all six seats in the area passed from Labour to the SNP, its finest victory in Glasgow.

It was from this base that Mr. Bovey began his campaign for the SNP only days after the death in January of the sitting MP. On polling day this week he will have completed two-and-a-half months of ceaseless effort—a campaign three times the length of those mounted by his Labour and Conservative opponents and one which, although it demonstrated his enthusiasm and stamina, inevitably peaked too early and is now on the decline.

Initially Mr. Bovey was helped by the choice of Mr. Donald Dewar, 40, and like his opponent a Glasgow lawyer, as the Labour candidate. A former MP and member of the Scottish Executive, Mr. Dewar made a courageous decision, which

many of his colleagues in the party would have ducked, and based his campaign squarely on a defence of the Government's economic record. He identified himself strongly in his speeches and on the doorstep with Mr. Callaghan's determination over prices and won respect for it.

But he left himself vulnerable on unemployment, which emerged as one of the big issues of the campaign as more bad news added to the factory closures and redundancies that have plagued the constituency. Mr. Bovey the stick with which to beat him, the latter surprisingly quickly encountered difficulty in finding new angles from which to strike the blows. As the SNP attack waned, Labour was able to retaliate by pressing the Nationalists on their independence policy—which the SNP had said would not be an issue in the by-election. Significantly for the next General Election, it has

become an issue and looks like being one which Labour can exploit effectively by playing on the fears of a break-up of Britain while understanding the desire for change and offering devolution as a comfortable, half-way house.

The Labour campaign reaches its climax this week. Three Cabinet Ministers, Mr. Millan, Mr. Hattersley and Mr. Foot (last night), have already visited Garscadden. Three more, Mrs. Williams, Dr. Owen and Mr. Wedgwood Benn, and the Budget are to come. Against this SNP will have to rely on its leader and popular parliamentary leader, Mr. Donald Stewart, and more relentless work at the grass roots.

Few people doubt that the next MP for the constituency will be one of these two candidates, but there are four others and the Conservative particularly could have a decisive effect on the outcome. The vigour with

which Mr. Iain Lawson, a 25-year-old office manager, has fought his campaign for the Tories has surprised some in his own party who assumed that the official strategy would be to make only a token attempt and allow the others to inflict the maximum damage on each other.

However, that philosophy is not one which appeals to Mr. Lawson, nor his mentor, Mr. Teddy Taylor, MP for Cathcart and Shadow spokesman on Scotland. Pursuing his view of Toryism as a broad-based movement with policies—such as being tough on vandals and criminals and selling council houses—that should appeal naturally to the working class voters of the big cities, Mr. Taylor has orchestrated a forceful campaign as he can, getting every Scottish Conservative MP to visit the constituency and Mrs. Thatcher to spend a morning talking to shoppers.

The effect this will have on the final vote is difficult to judge. The only independent opinion poll taken in the constituency (by Marplan for the Sun, more than a month ago) gave the Conservatives 18 per cent support, half as much again as they received in October 1974. The SNP was placed in front with 41 per cent and Labour close behind with 39. This suggests, and Conservative canvass returns also imply, that the party is not merely taking back some of the votes it lost to the SNP, but also taking votes from Labour.

Labour is now slightly less confident of holding the seat than it was two weeks ago. Its canvassing indicates that there are still sufficient voters undecided, or who will not declare their allegiance, to leave the result open. The left-wing candidates, Mrs. Shiona Farrell

of the breakaway Scottish Labour Party, Mr. Sammy Barr, the Communist, and Mr. Peter Porteous, of the Socialist Workers' Party, will take some votes which otherwise might have gone to Labour and there is the unknown impact of abortion as an issue in the by-election.

The Society for the Protection of the Unborn Child, an anti-abortion pressure group, has mounted a campaign exceeding in scale those of the minority parties and will even provide cash to get voters to the polls. The Catholic Church (from attendance at segregated schools it would appear that around a third of families in Garscadden is Catholic) has advised its members to think long and hard about the issue before voting and some priests have stressed the point from the pulpit.

Interpretation of by-election results has its dangers, the more so if they are, like this one, the only real indication of electoral feeling for a long period. The likelihood is that Labour will hold Garscadden, albeit by a much reduced majority, and recent political history in Scotland should prepare us for surprises. In any event the voting will have to be analysed carefully before any safe predictions can be made for the coming General Election, when the Government's survival could hang on its performance in west central Scotland.

General Election Oct. 1974

W. Small (Lab.)	19,737 (58.9%)
K. Bovey (SNP)	12,111 (31.2%)
J. Corbett (Con.)	5,004 (12.9%)
M. Kirby (Lib.)	1,915 (4.9%)
Labour majority	7,626 (19.7%)

Letters to the Editor

A dangerous philosophy

On Sir James Wilson, chairman, Tobacco Advisory Committee.

Sir—The article by Joe Rogaly (April 4) on taxation as a tool preventive medicine does not deal sufficiently with the important facts and points in principle when it comes to suggesting that cigarette smokers could be called upon to pay for their pleasures.

It is surely debatable whether Government, and certainly present one with its slender majority in this country, should be to direct social policy by tax or other means, and thereby manipulate the way of life of about half the electorate. A revenue of one thing, but the use of tax in this way is a dangerous philosophy that should be examined with great care.

There can be few instances where part of society will voluntarily say that it wants to be treated in this way, and smokers who already contribute equivalent (£2.5bn. per annum) of about half current social security costs, have made clear by their behaviour that they do not want this form of setting.

Initially, a supplementary tax "higher tax" cigarettes would be unjustified and unnecessary because the industry in agreement with health Ministers, is already taking effective measures to reduce the yield of these brands, and deliberately chosen not to be more attractive by reductions, which, in purely commercial terms, would have no effect.

That Mr. Rogaly should have no account are the effects of the cost of living of increases in indirect taxation, and the fact that the main impact of further indirect taxation would fall on lower paid and older people, is a generally preferred smaller cigarettes which have already eased in price by more than 10 per cent during the past two years.

Health is a consideration, but to achieve social ends is the answer in a free society.

as Wilson,
House,
Place, S.W.1.

Paternalistic collectivism

From Mr. A. Gray, 114, Mowbray Avenue, Montclair, New Jersey, U.S.

Sir—The article by Joe Rogaly (April 4) on taxation as a tool preventive medicine does not deal sufficiently with the important facts and points in principle when it comes to suggesting that cigarette smokers could be called upon to pay for their pleasures.

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as Wilson,
House,
Place, S.W.1.

The value of a good librarian

From the Business Manager, Shellpower Library Consultancy.

Sir—I was interested to read the article "Library services" on April 3.

Computerised information searches are indeed very powerful tools, and businessmen can expect to come into contact with them more often as hardware becomes cheaper and the data basis becomes more comprehensive.

I regret, however, that the article did not mention that most business information problems arise in the general areas of internal information storage and flow. For example, general circulation is very often a problem. The retrieval of all internal reports may be very difficult, items may be bought and lost, sometimes more than once. Material which would have been of interest may be overlooked, and so forth.

Efficient information management needs the skill of a chartered librarian who both attends to problems of internal information and puts managers into contact with appropriate outside forces, which will include a computer data basis.

K. R. Johnson,
56, Mowbray Gardens,
Newcastle-upon-Tyne.

Liability and products

From Mr. A. Benson.

Sir—Your insurance correspondent (April 3) has used a phrase which goes to the heart of the Pearson Commission and the EEC draft product liability directive matter. He writes "In deciding how to give the products injury victim greater certainty of compensation, and thus demonstrates a fundamental social compensatory thrust of the documents."

The proposed method of achieving this perfectly desirable end is to amend the law so as to impose a new financial burden on the producer, regardless of whether or not he has been in any way negligent in the manufacture of his product. The cost of this burden, whether the risk is absorbed by or insured by the producer, will be a component of the product price, and will undoubtedly ultimately be met by the consumer.

Bearing in mind that Pearson recommends no financial limit of liability in this context it seems probable that the majority of prudent producers will elect to protect themselves against this new liability by insurance. Taking into account the overheads and profits to be earned on this business both by insurers and brokers, and considering the extent to which the available premium fund will thus be depleted, it seems surprising that Pearson has not recommended an extension of the existing social security system for the provision of compensation in product-related injury cases. This could be financed at relatively less cost by per capita levy via the state; legal and other overheads would be substantially reduced and profit would not be derived from the exercise.

Is it too late for this point to be re-considered—to the possible economic advantage of consumers in general?

A. P. Benson,
"Jennetts",
28 Longdene Road,
Haslemere, Surrey

Education service

From the vice-chairman, Kent County Council Education Committee.

Sir—Mr. Roland Freeman (April 5) asked me to provide a list of significant decisions where the Education Committee "successfully defied Government policy during, say, the past year."

This is of course to distort the issue completely. Defiance would imply that the Government has the power to give an order and except in very circumscribed areas of policy it has no such power.

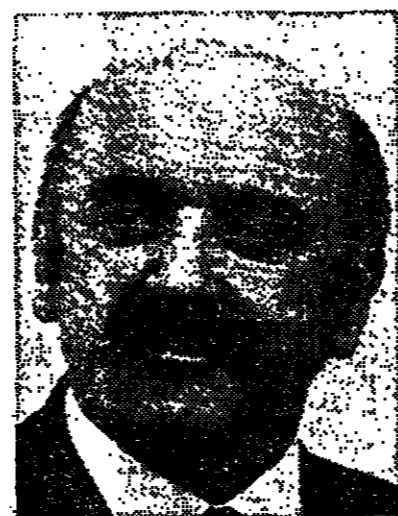
The plain fact is that local education authorities can at present discuss and decide policy in a very wide range of areas without reference to central Government. Indeed, in many fields we were ahead (in Kent) of the Government, perhaps because it has recently shifted ground. For example, we have drawn up a basic document on aims and objectives in primary schools; we have carried out our own research into assessment of standards in English and mathe-

To-day's Events

GENERAL
European Central Bankers begin two-day meeting in Basle.
First preliminary hearing of Crown Agents Tribunal of Inquiry, Lands Tribunal, Chancery Lane, W.C.2, 10.30 a.m.
Mr. Nobuhiko Ushiba, Japan's External Affairs Minister, to attend Ministerial meeting of the General Agreement on Tariffs and Trade, Geneva.
Canadian Budget.
Dr. David Owen, Foreign Secretary, at Garscadden by-election meeting, Knightswood Primary School, Glasgow.
Dr. Kurt Waldheim, Secretary General, United Nations, begins visit to Irish Republic.
Nominations close for Lambeth Central by-election.
British Rail cuts buffet prices.
European Parliament session opens, Luxembourg.
Two-day Financial Times conference on Business and the European Community Directives opens, Grosvenor House, W.1.
Sir Keith Joseph, MP, and Mr. Norman St. John-Stevas, MP, address Federation of Conservative Students Conference, Loughborough University.
London Chamber of Commerce and Industry seminar—The New Patent Act 1977, 69, Cannon Street, E.C.4.

PARLIAMENTARY BUSINESS
House of Commons: (National Enterprise Board (Financial Limit) Order and motion on Financial Assistance to British Leyland. Motion on EEC Documents on Farm Structure.
House of Lords: Debate on collective bargaining.
OFFICIAL STATISTICS
Wholesale price index (March, prov.).
COMPANY RESULTS
Associated Biscuit Manufacturers (full year). Glaxo Holdings (half-year).
COMPANY MEETINGS
See Week's Financial Diary on Page 13.

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Mark Byng, Chief Manager in Tokyo.

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FINANCIAL TIMES REPORT

Monday April 10 1978

Thistle Field

The two unique features of the Thistle Field are the depth of water in which it is situated, and the fact that it is the first field on which the British National Oil Corporation has acted as operator—and it also indicates the likely line for development on similar finds.

BNOC goes in at the deep end

By Ray Dafter, Energy Correspondent

THE BEGINNING of commercial production from the Thistle field marks a significant step in the development of the U.K. oil province. In physical terms, it has helped to extend offshore technology for production of equipment has had to be located at the deepest water so far encountered by field developers in the North Sea.

The Thistle consortium comprises one of the most widely diversified collection of companies, encompassing German and British state interests, one of the oil industry "seven sisters," a group which might be regarded as "mini-majors" and smaller independent undertakings. And Thistle marks the first commercial development of the British National Oil Corporation has assumed the role of operatorship. Clearly Thistle has not been an easy field to exploit. Even a commissioning process during the past couple of months has been dogged by foul weather (even worse than usual), by problems with several hundred valves caused by casting error and by last-minute hitches with development drilling.

Start-up

Even so the start-up of production has been much closer to its original schedule than many of the previous fields in the North Sea. And the nine companies in the Thistle consortium have been rewarded by apparently encouraging results from the first four production wells.

Production from the first five wells expected to be accomplished shortly, should be some 100,000 barrels a day, according to BNOC.

The field has an estimated 500m. to 635m. barrels of reserves assuming a recovery rate of about 50 per cent. of the oil reserves in place. This in itself is noteworthy for the average recovery rate worldwide is no more than 25 to 33 per cent.

The production platform has sufficient capacity to handle a flow rate of 200,000 barrels a day although peak output is expected to be nearer 200,000 to 240,000 b/d. This peak should be reached next year and last, according to stockbrokers Wood, Mackenzie, until 1981. From then on the rate of production will decline to about 40,000 b/d by about 1990. Coincidentally this is the rate of production expected to be achieved during this initial phase, although output for 1978 as a whole should average 120,000 barrels a day.

The first consignment of Thistle crude is being loaded via the single anchor leg mooring (SALM) system into the tanker Thistle Venture, one of three ships capable of carrying about 600,000 barrels of crude at a time between the field and various shore terminals. Eventually Thistle oil will be transported ashore by pipeline; a spur line will link with the Brent pipeline system and the Sullom-Voe oil terminal in the Shetland Islands.

with the wisdom of installing offshore loading facilities at the Thistle. Even when the pipeline is in operation the Thistle consortium might find it useful to keep the SALM as a back-up; as recent news reports have shown, pipelines are vulnerable to accidents. Both the Brent Field

and the Ekofisk Field pipelines have been buckled by dragging has a 16.29 per cent. stake in off-shore activities has been able to grow as rapidly as it has. In the case of a quarter of its interest has. The buyer was Ash-Phillips for \$78.8m. The group can maintain production land which, apart from gaining a 5.43 per cent. stake, also signed a contract to cover the remaining crude production. Within the next week or so acquisition of Santa Fe's interest in Thistle as a result of a £108m. deal with Burmah. This was negotiated, with Government backing, as a means of helping Burmah to extricate itself from its serious financial problems. Burmah had early on been the operator for the field, more of the Thistle partners

own acquisition of Signal Oil in Thistle are Tricentral, with a 9.65 per cent. stake; Gulf (1.16 per cent.); Conoco (1.16 per cent.); and the Charterhouse Group (0.96 per cent.). Within the past two months Deminex and Charterhouse have been taken under the umbrella

of state participation following agreements signed with the Government and BNOC. Deminex has followed the normal participation line, allowing BNOC access (at market price) to up to 51 per cent. of its oil production. In addition, BNOC has gained additional voting rights under the field operating agreements. The Charterhouse deal breaks completely new ground, however. Instead of signing a participation agreement Charterhouse has agreed to sell to BNOC the whole of its share of crude oil and natural gas liquids produced from block 211/18. The Department of Energy said

that this arrangement was agreed in view of Charterhouse's relatively small stake in Thistle. This deal is worthy of close examination for a number of reasons. First it highlights BNOC's growing role as a crude oil trader. By 1980 the Corporation could be handling between 800,000 and 1m. barrels a day of equity and participation crude. Oil taken as royalty will add to the figure so that by 1981 BNOC could be responsible for the disposal of about half of Britain's North Sea crude. To put that into a worldwide perspective, BNOC will be controlling perhaps 7 to 10 per cent. of the total output of low-sulphur premium crude.

The Charterhouse supplies will be a drop in the bucket when set against this amount of BNOC crude. Charterhouse's share of Thistle is expected to be around 5m. barrels, spread over the life of the field. Even so, BNOC is reported to have at least matched offers made by sizeable oil companies interested in buying the Charterhouse crude.

Exploitation Charterhouse could receive some \$70m. (at current prices) for the Thistle crude. And it might receive as much again if and when other reservoirs in block 211/18 are exploited. Although the Thistle consortium has had to relinquish half the block's acreage (a rectangular portion to the west of the Thistle and south of the northerly ninth well) it has managed to retain substantial

oil-bearing structures. The reservoir immediately to the west of Thistle, known as "Area One" is thought to extend into Shell/Esso's 211/23 Dunlin block. This could be quite an important field. Areas around wells number six, nine, 12 and 13 could add further significant quantities to total reserves in the block.

The possible development of these structures must be reserved for some future date. For a start they have not yet been fully evaluated; the consortium may drill three exploration or evaluation wells later this year. Secondly, it is almost certain that some of these areas would have to be exploited through new forms of production systems: sub-sea well completions or floating units, for example.

The Thistle Field is costing an estimated \$1bn. to develop. Standing in 530 feet of water the production platform is the biggest of its type in the North Sea; on land it would tower above St. Paul's or Cologne cathedrals. Mr. Don Shimmon, managing director of BNOC Development, once likened the installation of the platform with a moon-shot, in terms of its complexity, scheduling and reliability. It is questionable whether the cost and effort of another fixed-platform development can be justified by the non-Thistle reserves so far identified. On the other hand, it is unlikely that the partners will be allowed to leave the reserves in the Thistle and south of the northerly ninth well) it has of energy shortages foreseen for the end of this century.

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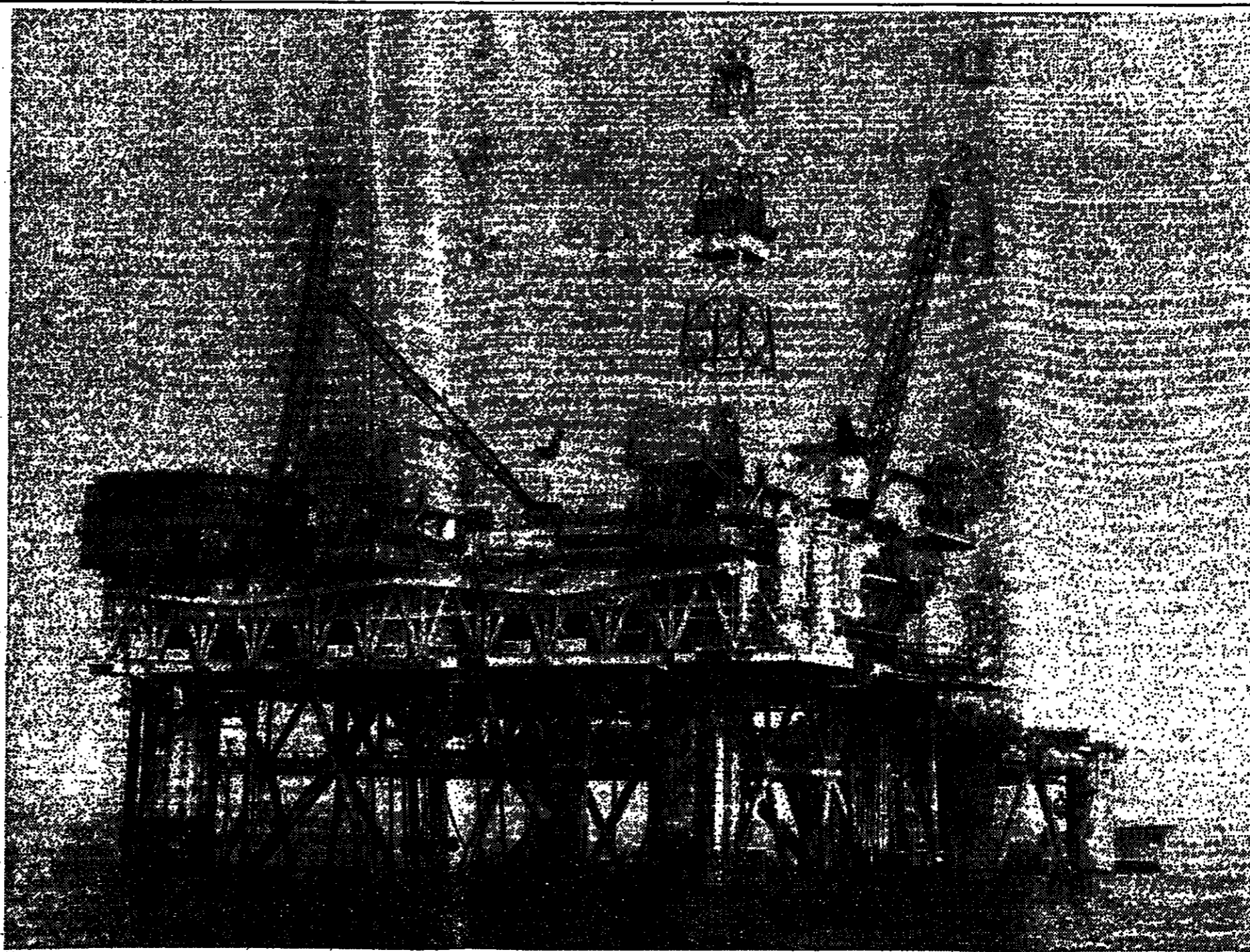
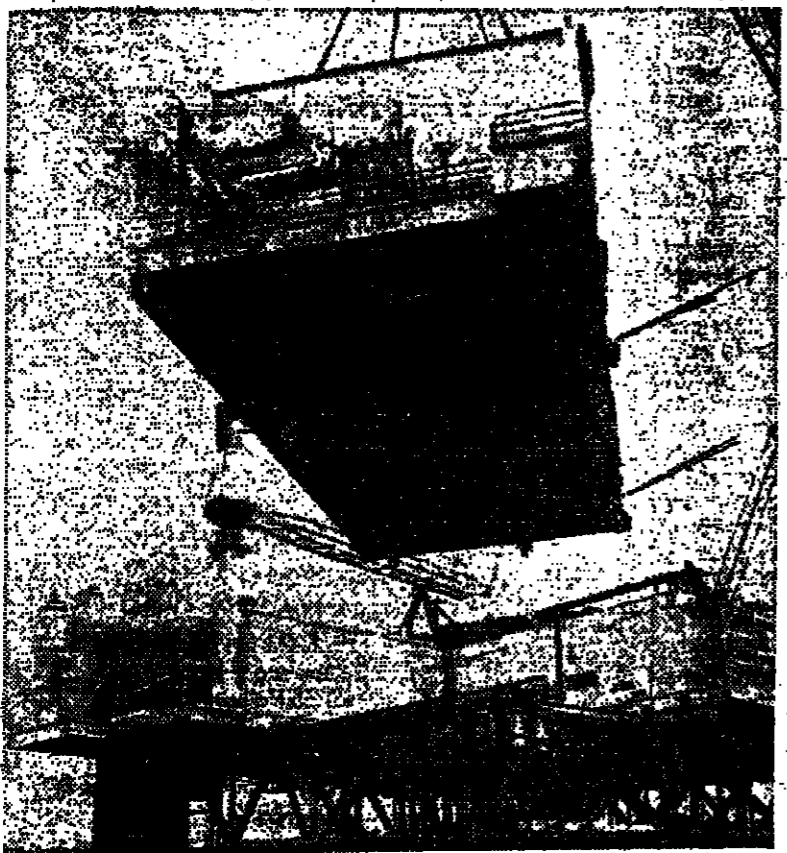
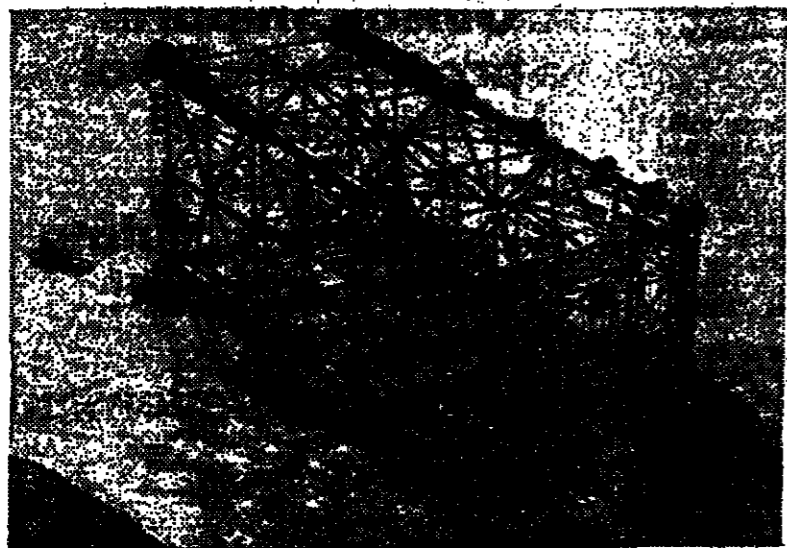
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Our responsibility to BNOC (Development) Ltd., the operator of the Thistle field, was for the overall design and engineering of the total project, whilst CJB-Earl & Wright handled the structural design work.

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are proud to be associated as the major economic interest holders, with the development of the Thistle Field and congratulate all parties involved in this magnificent achievement.

THISTLE FIELD II

The consortium partners

THE COMPOSITION of the companies which have shared its stake in the U.K. sector came as a surprise to the industry, but it gave Deminex a 22.5 per cent share in the Thistle Field block for an undisclosed sum that was thought to be in the region of \$60m. to \$70m.

In order to get U.K. Government approval for the purchase of these stakes in the field, Deminex — was ready to agree participation in principle by the British National Oil Corporation. It was a device that had been used before in the Thistle Field group by the Department of Energy, when it forced Burmah to accept participation as part of the rescue operation of the group. Final participation agreements were reached by Deminex with the Government in January this year, which gave BNOOC the right to buy at market price up to 51 per cent of Deminex's oil. In addition Deminex provided BNOOC with additional voting rights under the field operating agreements. Deminex did win the right to export directly to Germany some 50 per cent of its oil production.

Capacity
Though its crude reserves are still small, Deminex company's own refining capacity totalling some 46m. tons a year, about 25 per cent of the total refining capacity in West Germany. The group is the chief instrument of the Federal Government's energy supply policy and has been given up to DM1,375m. in financial support for the years 1969-1978. In a follow-up programme the state has made it clear that it is ready to provide up to another DM600m. in the three years to the end of 1981. More than DM1bn. has been allocated by Deminex towards its 41 per cent share in the development of the Thistle Field, and in the long term the company is looking to increase its reserves particularly in the North Sea and the North Atlantic.

State interests now play a dominant role in the Thistle field. The German state has its direct interest through a controlling 44 per cent of Veba, the biggest Deminex partner. But exactly how much crude it will be allowed to refine in West Germany will depend on delicate talks which have been taking place with the British Petroleum of the U.S. and the United Canso of Canada in 1975 to sell their North Sea interests.

The first crude shipment from Thistle is going to BNOOC and is destined for a Hummer side refinery. The second will go to Deminex, but the decision is still to be announced as to whether it will be exported to West Germany. To date the Government has fallen short of its target of refining up to two-thirds of the crude from the U.K. sector in Britain.

Wherever Thistle oil is finally refined it is certain that BNOOC will have a direct say in the control of more than half of the reserves. With the Government's completion of participation agreements with the field partners—BNOOC, Deminex, Santa Fe International, Tricentro, Burmah, Ashland, Conoco, Gulf and the Charterhouse Group—the Corporation has gained access to well over half of the field's output under several different arrangements. BNOOC officially started its existence on January 1, 1976, and in a short space of time its influence in U.K. offshore matters has become all-pervading. An important aspect of this power is its possible future control, through participation agreements and its own equity stake, in fields of more than half of the North Sea's oil production.

Thistle is the first commercial venture to be operated by BNOOC and marks the latest role it is playing as an oil trader. By 1980 it will be handling between 800,000 and 1m. barrels a day of equity and participation crude from the North Sea and this will be added to by oil taken as royalty. The total will be a significant one even in world terms. BNOOC will be controlling perhaps as much as 7 to 10 per cent of the world's total

output of low-sulphur premium crude—oil that is sought worldwide as a refinery ingredient for making light products such as petrol and chemicals.

Under the Act which established BNOOC it was given powers to act as an integrated oil company. However, for the moment its chief priorities are to gain access to crude oil through its equity and participation interests and to build up expertise as an offshore operator.

It also has a specific duty to act as an adviser to the government on oil matters.

With a fifth round of offshore licensing BNOOC was given the guarantee of a 51 per cent equity interest in all blocks allocated, which has confronted it with the task of negotiating individual agreements with each group of partners. The oil companies have been uneasy at the corporation's possible range of influence in these concessions. They have for example sought assurances that it would not use its power to unduly delay field development or use information obtained in one block to gain commercial advantage in another. But it is certainly

clear that BNOOC's advisory and monitoring roles have grown rapidly in the past two years.

It was with the Thistle Field that the Corporation took its first major steps forward to the status of an operating oil company when it acquired most of the assets, expertise, and exploration and production staff from the North Sea operation of Burmah Oil. Under this deal in 1976 BNOOC paid Burmah £103.3m. for 65 per cent of its holding in Thistle and the adjacent oil accumulations in Areas 1 and 6, as well as the company's interests in other parts of the North Sea. The Corporation paid £30m. for Burmah's block 3/8 interest in the Ninian Field.

Burmah was left with a toe-hold in the North Sea in the form of its 3.1 per cent interest in Thistle, but it had lost the operatorship and was left with a pale shadow of the role it had played before it encountered financial disaster. The company is finally extricating itself from these financial problems, and, though no longer an oil company, as such, it still sees itself as an oil-based enterprise. It is planning something of a North Sea comeback. It hopes to be involved in the sixth round of licensing—expected later this year—and it has taken on the role of offshore operator in two areas of the world, off the Italian Adriatic coast and off the Seychelles.

Over the past 12 months the share of other partners in the Thistle discovery have also altered with the conclusion of various deals. Santa Fe, the U.S. conglomerate with interests in railways, haulage, pipelines, property and construction,

forest products and other natural resources as well as petroleum, sold out part of its 21.72 per cent interest to Ashland Oil.

Ashland bought 5.43 per cent of Thistle for \$45.9m., an unexpectedly high price. The deal valued the price of the oil in the ground at nearly five times the figure paid by Deminex to earlier. (Though in the meantime, of course, the bulk of the development expenditure had been committed). Ashland is an oil company that is crude short in that it refines and markets much more than it produces. So it is not surprising that its agreement also gives it the right to buy more crude oil from Santa Fe's remaining 16.29 per cent interest.

While Ashland might have been short of crude, it was short of finance to fund development costs that for a time hampered the efforts of the other Thistle partner with a appreciable stake in the field, Tricentro.

Spread
This independent, British Oil Exploration and Development Company first began operations 60 years ago in Trinidad, Trinidad, Central Oilsfields, now has oil, gas and commercial interests stretching from U.K. to the Netherlands, U.S., Canada, Australia, Afghanistan, Malaysia and the Philippines, but like Burmah it has known the dark hours of financial problems. In 1934 it was facing liquidation, but a series of deals pulled it out of difficulty. The search for a cash flow surplus for oil and gas exploration has caused Tricentro to diversify into such areas as garages, garden supplies, builders' merchant and travel — it finally sold off its Trinidad interests in 1971 — and its efforts to fund the Thistle development finally met with success in 1976 when consortium of 15 banks provided the £60m. it needed.

The smallest shareholder Thistle with 0.96 per cent, Charterhouse Petroleum, part of the Charterhouse Group, which includes interests in banking, insurance, engineering and construction. It has agreed to sell to BNOOC its share of crude from Thistle, the relieving itself of the market responsibility. But its interest will grow. As a member of consortium it has an eight per cent interest in two blocks in the Moray Firth granted the fifth round, and together with Gulf Oil and Tricentro will be applying for licences the sixth round in the Sea Western Approaches. It is also looking for more licences in North Sea waters.

The remaining shareholders are Conoco, 1.16 per cent, a Gulf, 1.16 per cent. Both the major U.S. oil companies have far greater interests in the North Sea discoveries, particularly in the Murchison Field, also in the extension of the Dunlin Field.

Accommodation needs, apart from the 170 places available on the Thistle platform itself, will be provided by the Norwegian-owned Gullane, a new semi-submersible specially converted for its role with Thistle. This vessel has living space for the 200 men who will be needed to complete commissioning functions. It is not expected that the vessel will be needed much beyond the early summer and the charter expires at the end of the second quarter. Another accommodation vessel, the British-flag Belford Dolphin, has already left the field.

Emergency support will be available from the northern sector emergency services vessel, the Stena Welder, which has a fire-fighting capability of 20,000 gallons of water per minute.

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Bringing the oil ashore

TWO MAIN factors have determined the type of oil transport system to be used for Thistle's oil: the fact that the Brent field pipeline to the Sullom Voe terminal has not been brought into use on schedule and the geographical location of the field, 130 miles from Shetland in water 530 feet deep.

The non-availability, at least for the first year of Thistle production, of the pipeline left the operators with little alternative to a deep-water single point mooring to service a shuttle of oil tankers. But in spite of the still relative novelty of the SPM system, there is now a wide range of designs, based on the experience of the 200 or so moorings in use around the world, to choose from.

Thistle's mooring is of the single anchor leg variety and has been designed by the Single Buoy Moorings subsidiary of the Dutch shipbuilder, IHC, on the basis of an Exxon patent. This company has been responsible either wholly or partly for six point moorings already in service in the North Sea, but its previous installations in the North Sea and elsewhere have chiefly been standard single buoy moorings anchored to the seabed with long catenaries of chains.

At the time a design was sought for Thistle, it was believed that catenary chains (used for mooring the buoys) would be subject to ripple, chafing and resultant down-time because of the depth of water and roughness of conditions. This problem has, in fact, been solved in the last two years, but in the meantime Thistle was provided with a somewhat different system.

The single anchor leg mooring, adapted for deepwater use by replacing the chain connection between the seabed gravity anchor base and the buoy with a flexible tubular steel swivel assembly. It retains the basic feature of the single point mooring method — namely a weather-vane type buoy which is capable of swivelling 360 degrees, allowing the tethered vessel to swing around the mooring according to prevailing seas. This reduces the danger of collision between the tanker and the buoy.

The oil is taken on board the tanker by means of an underwater hose, which is connected to the central swivel assembly below the buoy. Originally, the intention was to use one of the anchor leg hoses for cargo and a second for ballast, which would have been skimmed and cleaned before being pumped into the ocean. Instead, a decision was taken to convert Thistle's tankers to carry segregated seawater ballast, thus eliminating the need for de-ballasting operations. The advantages of this are the avoidance of down-time or delay caused by the problems of separating oil residue from clean ballast during very rough weather, a general desire to recognise increasing concern for pollution matters and the interests. During the construction phase, a total of 100 support vessels were serving the field.

fact that the mooring's second hose consequently became free system to be used for Thistle's oil: the fact that the Brent field pipeline to the Sullom Voe terminal has not been brought into use on schedule and the geographical location of the field, 130 miles from Shetland in water 530 feet deep.

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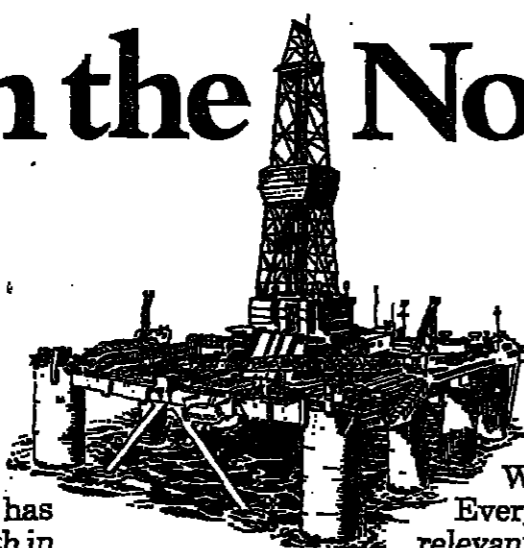
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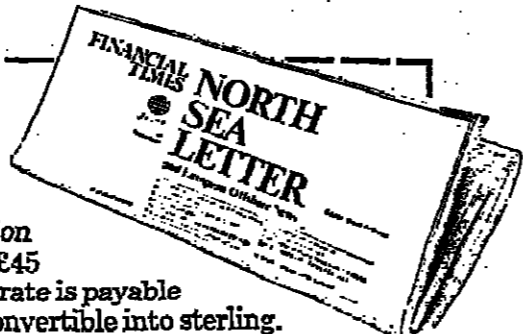
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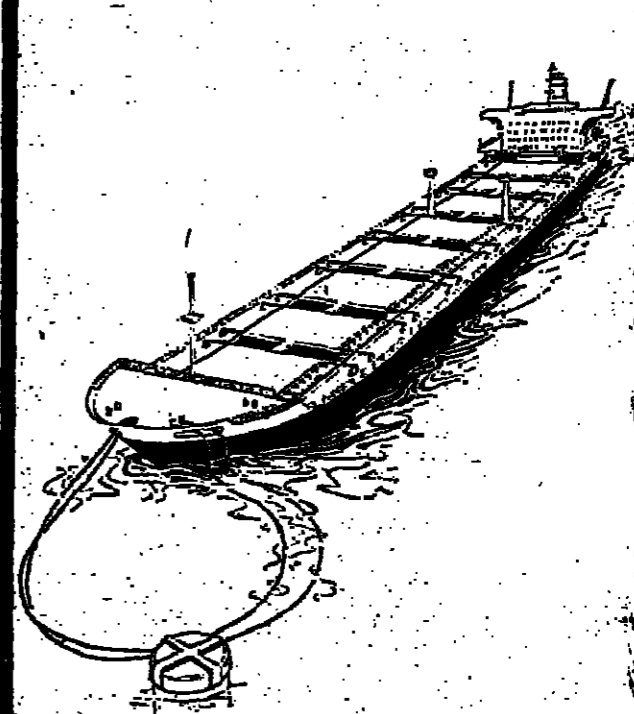
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Platform a feat in itself

IN ITS SHORT but eventful life, the British oil platform construction industry has faced a large share of criticism, ranging from accusations of poor quality, late delivery and failure to compete competitively on price, to a disappointing record in attracting follow on orders. There is undoubtedly some truth in all these charges, but it is equally true that the criticism has obscured some of the industry's achievements, which are impressive.

It is often forgotten that less

than ten years ago there was no platform industry in the U.K. Many of the companies which now have substantial successes tucked into their belts, had little or no experience in the offshore oil industry, and certainly no background in building and installing the sort of structures needed to withstand North Sea conditions.

They entered a lucrative market, but it was against competition from the U.S. and all over Europe, and often from firms

with worldwide reputations in the oil industry.

It is against this background that major feats of engineering such as the construction and installation of the Thistle "A" Platform should be judged. Its launch from Laing Offshore's Graythorpe yard on Teesside in the summer of 1976 was partially overshadowed by the fact that there was no follow on order and large scale redundancies resulted. Looked at now, it is perhaps easier to see the magnitude of the job.

Not only was Thistle the largest mobile structure then built—standing 920 feet from base to the top of its flare stack, and weighing 34,000 tons at float out (60,000 fully loaded)—but it was to be positioned in some of the deepest water in the North Sea oil province. British firms took a major slice of the \$800m. construction and installation contracts, and were involved at every stage.

The project was managed by Taywood-Santa Fe, which had the job of procuring supplies and services as well as co-ordinating design and construction. The design work was the responsibility of CJB Offshore, part of the John Brown Group, which sub-let the design of the platform and modules to the British-American joint venture formed by itself and Earl and Wright.

Involvement

CJB Offshore was also involved in the hook-up work with two other British companies, William Press and Balfour Kilpatrick. Together they had 500 men working offshore in difficult conditions removing the foundation modules and completing the tower. Despite the fact that the contract was one of the two biggest in the North Sea and that its novelty entailed some additional work, the job was completed inside the target period.

Construction of the jacket itself was carried out by Laing, but contracts for the 33 modules was distributed widely. Eight were built in France by U.I.E., and a further seven in Spain by Dragados, but the rest were built by British companies—William Press, E.A.E., Motherwell Bridge and Foster Wheeler, which had 12.

The position of the Thistle Field 130 miles north-east of Shetland under 530 feet of

water—one of the deepest offshore sites anywhere in the world—dictated the sort of platform needed. It was clear from the start that it would have to be very big and strong to withstand some of the worst weather in the North Sea. In the event, the designers built into the platform an ability to withstand storms only expected to occur once in every 100 years—wave heights of nearly 100 feet and gusts of wind up to 152 mph.

The designers considered a concrete gravity platform which would merely sit on the sea bed, using its great weight to maintain position, but after studying the geology rejected the idea. The seabed, made up of layers of various sands up to six feet thick sitting on silty clays, was not considered strong enough to withstand the enormous strains which would be transmitted by the platform base as the structure was rocked by wind and waves.

So they opted for steel, which meant that the jacket would have to be the largest steel structure ever constructed and that it would have to be piled into the seabed. The implications of that can be judged from the fact that the piles themselves weighed 11,000 tons.

The adopted design, which was built by Laing using 24,000 tons of steel, was for a tower 607 feet tall with a base measuring 280 feet by 270 feet. It had two straight legs 30 feet in diameter with cylindrical oil storage tanks mounted along them at the base capable of holding 35,000 barrels of crude each.

The other two legs, inclined inwards, were tapered, narrowing from 20 feet diameter at

the base to six feet at the top. The tower was built on its back in the graving dock at Graythorpe, using the two straight legs as a base. When the dock was flooded at the start of the 485-mile voyage to the field, these legs and the storage tanks mounted on them, acted as buoyancy tanks, enabling the huge structure to float unsupported.

It was accompanied to its destination by four ocean-going tugs with a combined horsepower of 30,000, which stood by while one of the most delicate parts of the operation, the flooding of the tanks to turn the tower upright and drop it into position, was carried out.

Complexity

This manoeuvre—so complex that it was likened by one of the partners to a space launch—had been practised many times in miniature using a scale model floating in a water tank. It entailed a controlled flooding of the compartments in each buoyancy tank so that the tower could be uprighted, rotated on its axis and finally dropped on to the seabed.

The operation was made easier by the weather. The day in August 1976 was fine and the sea flat calm. There was a slight moment of anxiety when the wire link between the control ship, MV Orca, and the platform's control module failed, but a radio back-up system took over automatically and positioning was achieved perfectly first time.

When the tower touched the bottom, its own weight caused the legs to sink slightly into the sand, providing sufficient

stability until the first piles were driven in place.

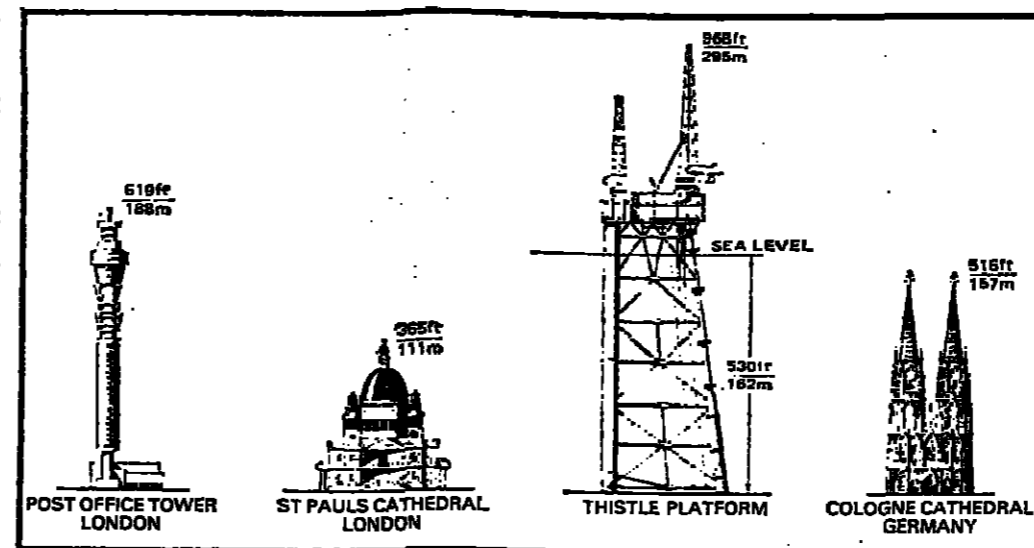
Piling was done from the tower itself, using equipment housed in modules placed on the structure directly after positioning. The 32 first stage piles, 54 inches in diameter and 200 feet long, were driven home by heated-air operated hammers to a depth of 101 feet below the sea bed. After driving they were permanently bonded to the guides around the tower legs with special cement.

When this was complete, central holes were drilled into the piles to a depth of up to 470 feet and the second stage piles inserted and grouted in place.

Completion of the piling and removal of the construction modules, was followed by the loading of the modules containing drilling and production equipment, which made up the first two decks of the tower and contained the two 26 megawatt gas turbine driven generators to power the platform's systems, the water injection pumps, compressors for gas re-injection, gas and water separation equipment, meters to measure the oil production, the wellheads, drilling rigs, stores, control rooms and other equipment.

Above these two decks were placed the modules providing accommodation for the 130 permanent production workers, the helicopter pad and flare tower. Only when installation of all these had been completed could work begin on the important job of drilling the 40 production and 20 injection wells.

Ray Perman
Scottish Correspondent



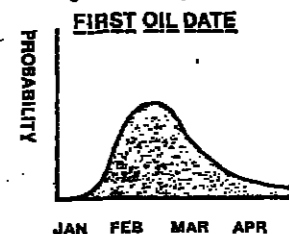
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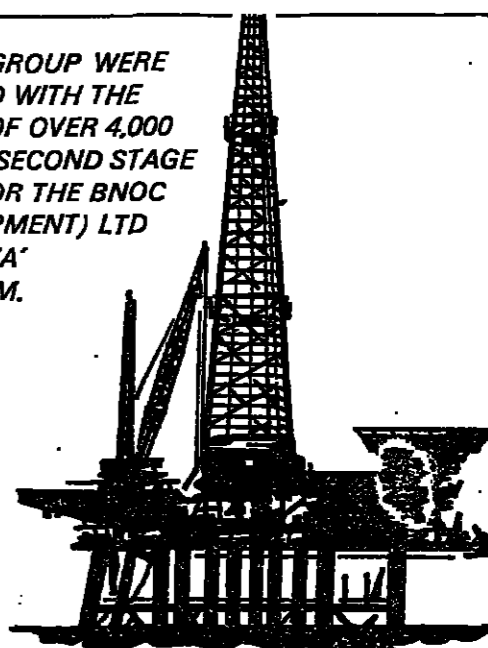
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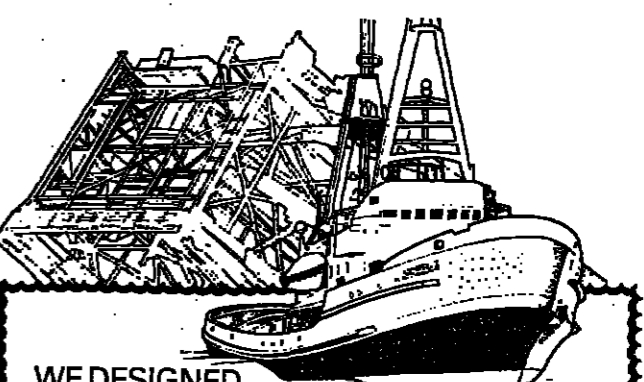
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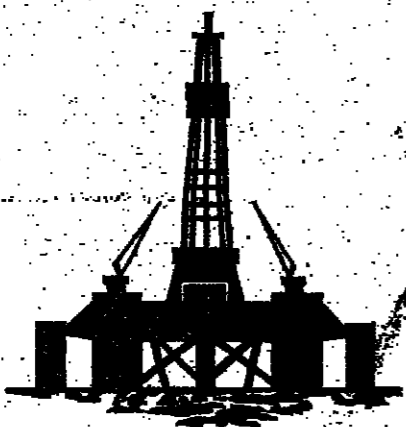
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Maintenance is the next concern

THE CONSTRUCTION phase on Thistle is not yet complete, but work is winding down. More wells will be drilled until the platform has its full complement, in 1979. Then BNOG, as operator, will be producing about 200,000 barrels of oil a day, for itself and its field partners.

As this stage is reached it might be expected that the platform personnel will fall into a rhythmic routine with everything working in accordance to a defined programme.

But there will be problems, emergencies and surprises. The industry is young, and every platform is different. Equipment failures, even minor failures, can be expensive. At peak, production will be worth about £1.4m. a day and the cost of a shutdown will be enormous. There is no North Sea platform that has not had to shut down since it went on stream but it is obvious sense to take every possible step to keep shut-down time to a minimum.

Coupled with the financial cost is the social cost of failure. In North Sea conditions, breakdowns can cause accidents, loss of life and pollution of the sea. Recent events confirm the reality of the risk. The Ekofisk Field blow-out occurred less than a year ago, followed by the Magnus Explorer blow-out in the Danish sector. Last month five men died in a fire on the Statfjord Field and there have been other lesser incidents.

The public does not forgive or forget incidents of this kind quickly and hence oil companies and governments have become increasingly aware of the need for adequate safety precautions.

Perhaps unfairly, BNOG is in a peculiarly sensitive position here. Because it is the state oil corporation, any suggestion that it fell short of expected standards would attract more criticism than the shortcomings of an ordinary commercial oil company. Like Caesar's wife, the corporation must be above suspicion.

Chet Rybicki, Thistle project manager, sees the question of avoiding structural and equipment failures as falling into four phases—design, inspection, aspection and maintenance programme when equipment is in use and, finally, safety precautions.

In all these matters there are, of course, the requirements of the regulatory agencies. But BNOG's standards, the management maintains, go beyond those required by the certifiers and the law.

Being the ninth field to come on stream should have its advantages as far as design is concerned. The designers and manufacturers responsible may be expected to have an advantage from the learning curve. The cautious BNOG management do not see that this is necessarily so. They simply acknowledge that it should be.

Then comes the important phase of the inspection of new equipment, carried out, say the BNOG men, with scrupulous care and with every piece logged to record its exact condition when new. An example cited is the flowline, which has been ultrasonically inspected to determine its exact condition, the precise wall thickness and the quality of the welds. If they come up to standard, the operator has a base from which to measure erosion and corrosion and ensure that it is selected modules, such as the gas compression and power to generation modules, where there is a significant explosion risk, is a significant explosion risk, means maintenance.

But, of course, the platform facilities include the full array of protection systems, as advanced as is practicable, say the managers. These include ultra-violet smoke and fire detection systems, sprinklers and deluge systems, a halon gas to measure erosion and corrosion and ensure that it is selected modules, such as the gas compression and power to generation modules, where there is a significant explosion risk, is a significant explosion risk, means maintenance.

The BNOG men are reluctant to talk about these devices in detail. "We never give our reasons for buying a particular item of equipment," said one of them, stiffly. Always on the field, and essential to both maintenance and safety is the support vessel Stena Welder, on long-term charter to BNOG. She is a multi-purpose ship with full

OVERSEAS MARKETS

EUROBONDS

Dollar sector remains firm

BY MARY CAMPBELL

THE DOLLAR sector displayed remarkable resilience last week. A number of dealers had feared a sharp reaction to the previous week's record trade deficit, but this did not materialise. Indeed prices ended the week, if anything, slightly up on the week before.

The general opinion seemed to be that there was relatively good two-way business from retail customers—a view borne out by last week's Euroclear and Cedel turnover figures (unless these were inflated by new issues reaching the market).

Except against the yen, the dollar remained pretty steady on the foreign exchange markets—or even strengthened. Eurodollar interest rates were little changing in Europe this week. According to some dealers this opened the way for two different views on prospects for the dollar and dollar interest rates. One view, which in turn promoted the two-way business, was that the dollar was raised by half a point at the pricing of Whitbread starts trading today. Prices were not much changed in the D-mark sector last week though the tendency continued to favor the D-mark. Dealers also noted the better quality names and push their prices up while "exotic" issues stagnated. Another view, most of the week, was that although there was only one new issue announcement—Norway's

The two unqualified successes of the week were the Amex floating rate note issue and the Norges Kommunalbank issue on the New York market. The former traded well up to par and above, while the Norges Kommunalbank issue was quoted

To-day, Dresdner is expected to announce a DM100m. issue for a Scandinavian company. Deutsche Bank is scheduled for a DM100m. issue by a German company. The Sub-Committee of the London Stock Exchange. On Wednesday, West LB is due to announce a DM150m. issue for a Canadian borrower. Expected late this week is a DM40m. eight year convertible for Sankyo Electric via Bay-

the calendar (Issues by the foreign subsidiaries of German companies do not have to be announced in the Capital Markets Yearbook). The German Bank is managing and underwriting it by itself but selling the bonds through a placing group of between 50 and 100 institutions (at a discount of 1½ per cent.).

An increasing amount of attention

A coupon of around 4 per cent. is likely with the conversion premium at the usual level of around 10 per cent.

The April calendar, agreed on Monday, is relatively light. More important, so far as can be seen it contains only one "exotic" name—the National Financiere DM100m placement postponed last month.

Die Cle Financiere de la Deutsche Bank issue is outside the first time.

The first such instance was Argentina's issue, when Deutsche Bank was reportedly allotted one per cent. of the

	BONDTRADE INDEX AND YIELD			
	April 7	March 31	High	Low
1978	60.50	60.50	60.50	60.50

total. The ground rules in general seem to be that foreign underwriters will be allotted up to five per cent of the total issue.	(g'teed Norway)	75
	†American Express	40
	IC Industries	35
The basis for an invitation to underwrite in general will be that the institution involved should be lead manager for the same borrower in another currency sector.	†IHI (g'teed	
	Dai-ichi Kangyo)	50
	TVO (g'teed Finland)	25
	†United Overseas Bank	25
	D-MARKS	

Spain	200
Light-Services (Gated Brazil)	150
Norway	250
Cie Fin de la Deutsche Bank	200
STERLING	
†Gestetner	70
YEN	

Argentina	15kn.
Norway	25kn.
SWISS FRANCS	
11ADB	80
11AC	25
11ABZburg	30
KUWAITI DINARS	

The coupon levels for Swiss franc bonds seem to be fixed again. Secondary market prices have now stabilised and the market has begun to pick up. The Inter-American Development Bank offering is reportedly meeting good demand.

Maturity	Av. life years	Coupon %	Price	Lead manager	Offer yield %
1998	13	9½	99½	Smith Barney	9.39
1982/85	—	—	100	EBIC, Amex Bank	—
1985	7	9	100	Merrill Lynch	—
1985	7	5½	*	First Boston (Europe)	—
1988	7.8	9½	*	ADNOC, KPTCIC	—
				Cham. Man. Ltd.	—
1983	5	6½	100	Salomon	6.09
1985	7	6	100	Deutsche Bank	6
1988	10	6	*	Dresdner	6
1986	8	6½	*	Westdeutsche Landesbank	*
1983	5	4½	100	Deutsche Bank	4.375
1983	5	4½	100	Deutsche Bank	4.375
1988	8.6	11	100	N. M. Rothschild, Morgan Grenfell	11
1984	8	6.4	99.10	Yamachi Securities	n.a.
1983	5	5.7	99.20	Daiwa Securities	n.a.
1993	15	4½	99	Swiss Bank Corp.	4.35
1993	15	4½	100	Crédit Suisse	4.25
1993	15	4½	100	Swiss Bank Corp.	4.25

1985/90	—	84	*	KIIC	•
1993	†	7	*	Kreditbank Lux.	•
* Placement. † Floating rate note. ‡ U.S. Securities and Exchange Commission. Notes: Yields are calculated on AWD basis.					
				Minimum.	§ Convertible.
				¶ Purchase fund.	

Indices

NEW YORK -DOW JONES

	1974						stock comparison			
	Apr. 7	Apr. 8	Apr. 9	Apr. 2	Apr. 2	Mar. 31	High	Low	High	Low
Industrial...	788.54	783.96	786.86	758.57	751.04	757.36	7.74 (28/2)	742.12 (11/17/3)	1051.70	41.22 (8/23/2)
H'me B'nds...	89.35	89.40	89.50	88.48	88.46	89.54	90.66 (+1)	88.51 (28/1)	89.55	15.25
Transp'rt...	208.02	206.86	206.27	205.48	205.40	207.15	215.77 (31/1)	199.51 (19/1)	275.88	15.25 (8/23/2)
Utilities...	105.95	105.55	105.51	105.84	104.74	105.68	102.54 (22/2)	108.38 (22/2)	125.55	38.44/2
Trading vol. 000's of	26,160	27,530	27,256	20,150	20,230	20,150	—	—	—	—

* Basis of index changed from August 24.

STANDARD AND POOLS

	Apr. 7	Apr. 6	Apr. 5	Apr. 4	Apr. 3	Mar. 31	1918		Since Completed	
							High	Low	High	Low
Industrial	88.17	88.72	88.86	87.85	87.30	88.02	103.22 (3/11)	85.82 (4/15)	124.54 (11/17/23)	5.52 (3/20/32)
Composite	89.17	89.72	89.84	88.86	88.46	89.24	103.82 (3/11)	86.85 (4/15)	125.85 (11/17/23)	6.82 (1/16/32)
				Apr. 5		Mar. 29		Mar. 22	Year ago (approx.)	
Ind. dist. yield %				5.39		5.46		5.46	4.89	
Ind. Pri. Bonds				8.48		8.48		8.48	10.21	
Long Govt. Bond yield				8.32		8.25		8.15	7.73	

N.Y.S.E. ALL COMMON					Rises and Falls			
1978					Apr. 7		Apr. 6	Apr. 5
Apr. 7	Apr. 6	Apr. 5	Apr. 4		High	Low	Issue traded	
							1,841	1,848
							888	1,873
							525	1,922
							446	435
							—	20
50.41	50.18	50.85	49.68	51.82 (5/1)	45.37 (6/5)			

MONTREAL					1978			
	Apr. 7	Apr. 6	Apr. 5	Apr. 4	High	Low		
Industries Combined	177.71 184.31	176.51 185.02	171.51 181.37	175.85 178.88	177.71 (7/6)	182.90 (18/2)		
					185.51 (7/6)	170.62 (50/1)		

TORONTO		Composite		1978			
		1075.2	1089.5	1054.8	1057.5	1075.2 (7/6)	886.2 (50/1)

TORONTO BUREAU		GORE		GORE		1978			
		198.5	198.5	198.5	201.5	218.7 (1/2)	155.1 (21/3)		
		206.5	205.5	204.5	207.5	214.4 (1/2)	154.5 (15/5)		

	April 7	Previous	1978 High	1978 Low		April 7	Previous	1978 High	1978 Low
Australia (a)	480.14	469.84	479.45 (1.0)	441.19 (1.0)	Spain (a)	90.75	90.58	91.90 (10.1)	77.45 (1.6)
Belgium (a)	96.98	96.07	96.98 (1.0)	90.45 (1.0)	Sweden (a)	371.50	370.19	371.91 (74)	325.74 (1.0)
Denmark (a)	96.26	96.18	96.18 (9.1)	94.00 (5.6)	Switzerland (d)	286.5	286.5	286.5 (14.2)	110.5 (1.0)
France (a)	64.6	63.7	64.6 (1.0)	62.0 (2.0)					
Germany (a)	600.4	602.9	612.7 (10.2)	788.2 (4.1)					
Holland (a)	77.0	76.8	78.0 (1.0)	76.0 (4.4)					
Hong Kong (a)	447.17	445.35	450.67 (10.6)	383.44 (1.0)					
Italy (a)	80.34	60.63	65.56 (1.0)	64.46 (1.0)					
Japan (a)	408.20	409.86	410.81 (1.0)	385.00 (4.1)					
Singapore (a)	336.85	394.87	356.35 (1.4)	345.00 (1.0)					

Indices and base dates (all base values 100 except NYSE All Common - 95)
 (a) Standard & Poor's 500 Composite Index
 (b) S&P 500 - 1958
 (c) S&P 500 - 1958
 (d) S&P 500 - 1958
 (e) S&P 500 - 1958
 (f) S&P 500 - 1958
 (g) S&P 500 - 1958
 (h) S&P 500 - 1958
 (i) S&P 500 - 1958
 (j) S&P 500 - 1958
 (k) S&P 500 - 1958
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 (z) S&P 500 - 1958

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[illegible]

Black & Campbell	201	Perimeter	203	1	48
H. J. Niles	205	Perimeter	205	1	48

OVERSEAS SHARE INFORMATION

NEW YORK

High	Low	Stock	April 7	51 1/2	46 1/2	Corning Glass	47 1/2
65 1/2 <td>80<td>Verity Lites<td>94 1/2<td>88 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td></td></td>	80 <td>Verity Lites<td>94 1/2<td>88 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td></td>	Verity Lites <td>94 1/2<td>88 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td>	94 1/2 <td>88 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td>	88 1/2 <td>34 1/2<td>42 1/2<td>45 1/2</td></td></td>	34 1/2 <td>42 1/2<td>45 1/2</td></td>	42 1/2 <td>45 1/2</td>	45 1/2
18 1/2 <td>17 1/2<td>Videograph<td>18 1/2<td>33 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td></td></td>	17 1/2 <td>Videograph<td>18 1/2<td>33 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td></td>	Videograph <td>18 1/2<td>33 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td>	18 1/2 <td>33 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td>	33 1/2 <td>34 1/2<td>42 1/2<td>45 1/2</td></td></td>	34 1/2 <td>42 1/2<td>45 1/2</td></td>	42 1/2 <td>45 1/2</td>	45 1/2
35 1/2 <td>31 1/2<td>Alcan Life & Cas<td>35 1/2<td>38 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td></td></td>	31 1/2 <td>Alcan Life & Cas<td>35 1/2<td>38 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td></td>	Alcan Life & Cas <td>35 1/2<td>38 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td>	35 1/2 <td>38 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td>	38 1/2 <td>34 1/2<td>42 1/2<td>45 1/2</td></td></td>	34 1/2 <td>42 1/2<td>45 1/2</td></td>	42 1/2 <td>45 1/2</td>	45 1/2
49 1/2 <td>45 1/2<td>Alcoa<td>49 1/2<td>21 1/2<td>16 1/2<td>20 1/2<td>22 1/2</td></td></td></td></td></td></td>	45 1/2 <td>Alcoa<td>49 1/2<td>21 1/2<td>16 1/2<td>20 1/2<td>22 1/2</td></td></td></td></td></td>	Alcoa <td>49 1/2<td>21 1/2<td>16 1/2<td>20 1/2<td>22 1/2</td></td></td></td></td>	49 1/2 <td>21 1/2<td>16 1/2<td>20 1/2<td>22 1/2</td></td></td></td>	21 1/2 <td>16 1/2<td>20 1/2<td>22 1/2</td></td></td>	16 1/2 <td>20 1/2<td>22 1/2</td></td>	20 1/2 <td>22 1/2</td>	22 1/2
25 1/2 <td>22 1/2<td>Alcan Aluminum<td>25 1/2<td>24 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td></td></td>	22 1/2 <td>Alcan Aluminum<td>25 1/2<td>24 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td></td>	Alcan Aluminum <td>25 1/2<td>24 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td>	25 1/2 <td>24 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td>	24 1/2 <td>19 1/2<td>25 1/2<td>27 1/2</td></td></td>	19 1/2 <td>25 1/2<td>27 1/2</td></td>	25 1/2 <td>27 1/2</td>	27 1/2
45 1/2 <td>36 1/2<td>Aluminum Ind.<td>45 1/2<td>38 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td></td></td>	36 1/2 <td>Aluminum Ind.<td>45 1/2<td>38 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td></td>	Aluminum Ind. <td>45 1/2<td>38 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td>	45 1/2 <td>38 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td>	38 1/2 <td>34 1/2<td>42 1/2<td>45 1/2</td></td></td>	34 1/2 <td>42 1/2<td>45 1/2</td></td>	42 1/2 <td>45 1/2</td>	45 1/2
20 1/2 <td>18 1/2<td>Aluminum Pwr.<td>20 1/2<td>19 1/2<td>18 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td></td></td>	18 1/2 <td>Aluminum Pwr.<td>20 1/2<td>19 1/2<td>18 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td></td>	Aluminum Pwr. <td>20 1/2<td>19 1/2<td>18 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td>	20 1/2 <td>19 1/2<td>18 1/2<td>25 1/2<td>27 1/2</td></td></td></td>	19 1/2 <td>18 1/2<td>25 1/2<td>27 1/2</td></td></td>	18 1/2 <td>25 1/2<td>27 1/2</td></td>	25 1/2 <td>27 1/2</td>	27 1/2
42 1/2 <td>34 1/2<td>Alum. Chem.<td>42 1/2<td>38 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td></td></td>	34 1/2 <td>Alum. Chem.<td>42 1/2<td>38 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td></td>	Alum. Chem. <td>42 1/2<td>38 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td></td>	42 1/2 <td>38 1/2<td>34 1/2<td>42 1/2<td>45 1/2</td></td></td></td>	38 1/2 <td>34 1/2<td>42 1/2<td>45 1/2</td></td></td>	34 1/2 <td>42 1/2<td>45 1/2</td></td>	42 1/2 <td>45 1/2</td>	45 1/2
26 1/2 <td>24 1/2<td>Alum. Ind.<td>26 1/2<td>20 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td></td></td>	24 1/2 <td>Alum. Ind.<td>26 1/2<td>20 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td></td>	Alum. Ind. <td>26 1/2<td>20 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td>	26 1/2 <td>20 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td>	20 1/2 <td>19 1/2<td>25 1/2<td>27 1/2</td></td></td>	19 1/2 <td>25 1/2<td>27 1/2</td></td>	25 1/2 <td>27 1/2</td>	27 1/2
26 1/2 <td>22 1/2<td>Alum. Chlorine<td>26 1/2<td>16 1/2<td>15 1/2<td>20 1/2<td>22 1/2</td></td></td></td></td></td></td>	22 1/2 <td>Alum. Chlorine<td>26 1/2<td>16 1/2<td>15 1/2<td>20 1/2<td>22 1/2</td></td></td></td></td></td>	Alum. Chlorine <td>26 1/2<td>16 1/2<td>15 1/2<td>20 1/2<td>22 1/2</td></td></td></td></td>	26 1/2 <td>16 1/2<td>15 1/2<td>20 1/2<td>22 1/2</td></td></td></td>	16 1/2 <td>15 1/2<td>20 1/2<td>22 1/2</td></td></td>	15 1/2 <td>20 1/2<td>22 1/2</td></td>	20 1/2 <td>22 1/2</td>	22 1/2
35 1/2 <td>31 1/2<td>Alum. Ind.<td>35 1/2<td>28 1/2<td>26 1/2<td>32 1/2<td>34 1/2</td></td></td></td></td></td></td>	31 1/2 <td>Alum. Ind.<td>35 1/2<td>28 1/2<td>26 1/2<td>32 1/2<td>34 1/2</td></td></td></td></td></td>	Alum. Ind. <td>35 1/2<td>28 1/2<td>26 1/2<td>32 1/2<td>34 1/2</td></td></td></td></td>	35 1/2 <td>28 1/2<td>26 1/2<td>32 1/2<td>34 1/2</td></td></td></td>	28 1/2 <td>26 1/2<td>32 1/2<td>34 1/2</td></td></td>	26 1/2 <td>32 1/2<td>34 1/2</td></td>	32 1/2 <td>34 1/2</td>	34 1/2
11 1/2 <td>9 1/2<td>Amer. Airline<td>9 1/2<td>48 1/2<td>38 1/2<td>44 1/2<td>46 1/2</td></td></td></td></td></td></td>	9 1/2 <td>Amer. Airline<td>9 1/2<td>48 1/2<td>38 1/2<td>44 1/2<td>46 1/2</td></td></td></td></td></td>	Amer. Airline <td>9 1/2<td>48 1/2<td>38 1/2<td>44 1/2<td>46 1/2</td></td></td></td></td>	9 1/2 <td>48 1/2<td>38 1/2<td>44 1/2<td>46 1/2</td></td></td></td>	48 1/2 <td>38 1/2<td>44 1/2<td>46 1/2</td></td></td>	38 1/2 <td>44 1/2<td>46 1/2</td></td>	44 1/2 <td>46 1/2</td>	46 1/2
46 1/2 <td>39 1/2<td>Amer. Aerial<td>46 1/2<td>34 1/2<td>32 1/2<td>42 1/2<td>44 1/2</td></td></td></td></td></td></td>	39 1/2 <td>Amer. Aerial<td>46 1/2<td>34 1/2<td>32 1/2<td>42 1/2<td>44 1/2</td></td></td></td></td></td>	Amer. Aerial <td>46 1/2<td>34 1/2<td>32 1/2<td>42 1/2<td>44 1/2</td></td></td></td></td>	46 1/2 <td>34 1/2<td>32 1/2<td>42 1/2<td>44 1/2</td></td></td></td>	34 1/2 <td>32 1/2<td>42 1/2<td>44 1/2</td></td></td>	32 1/2 <td>42 1/2<td>44 1/2</td></td>	42 1/2 <td>44 1/2</td>	44 1/2
40 1/2 <td>34 1/2<td>Amer. Aerial<td>40 1/2<td>26 1/2<td>24 1/2<td>32 1/2<td>34 1/2</td></td></td></td></td></td></td>	34 1/2 <td>Amer. Aerial<td>40 1/2<td>26 1/2<td>24 1/2<td>32 1/2<td>34 1/2</td></td></td></td></td></td>	Amer. Aerial <td>40 1/2<td>26 1/2<td>24 1/2<td>32 1/2<td>34 1/2</td></td></td></td></td>	40 1/2 <td>26 1/2<td>24 1/2<td>32 1/2<td>34 1/2</td></td></td></td>	26 1/2 <td>24 1/2<td>32 1/2<td>34 1/2</td></td></td>	24 1/2 <td>32 1/2<td>34 1/2</td></td>	32 1/2 <td>34 1/2</td>	34 1/2
26 1/2 <td>23 1/2<td>Amer. Cyn. & B.<td>26 1/2<td>22 1/2<td>20 1/2<td>26 1/2<td>28 1/2</td></td></td></td></td></td></td>	23 1/2 <td>Amer. Cyn. & B.<td>26 1/2<td>22 1/2<td>20 1/2<td>26 1/2<td>28 1/2</td></td></td></td></td></td>	Amer. Cyn. & B. <td>26 1/2<td>22 1/2<td>20 1/2<td>26 1/2<td>28 1/2</td></td></td></td></td>	26 1/2 <td>22 1/2<td>20 1/2<td>26 1/2<td>28 1/2</td></td></td></td>	22 1/2 <td>20 1/2<td>26 1/2<td>28 1/2</td></td></td>	20 1/2 <td>26 1/2<td>28 1/2</td></td>	26 1/2 <td>28 1/2</td>	28 1/2
24 1/2 <td>22 1/2<td>Amer. Elec. Pwr.<td>24 1/2<td>11 1/2<td>10 1/2<td>16 1/2<td>18 1/2</td></td></td></td></td></td></td>	22 1/2 <td>Amer. Elec. Pwr.<td>24 1/2<td>11 1/2<td>10 1/2<td>16 1/2<td>18 1/2</td></td></td></td></td></td>	Amer. Elec. Pwr. <td>24 1/2<td>11 1/2<td>10 1/2<td>16 1/2<td>18 1/2</td></td></td></td></td>	24 1/2 <td>11 1/2<td>10 1/2<td>16 1/2<td>18 1/2</td></td></td></td>	11 1/2 <td>10 1/2<td>16 1/2<td>18 1/2</td></td></td>	10 1/2 <td>16 1/2<td>18 1/2</td></td>	16 1/2 <td>18 1/2</td>	18 1/2
29 1/2 <td>26 1/2<td>Amer. Home Prod.<td>29 1/2<td>17 1/2<td>16 1/2<td>21 1/2<td>23 1/2</td></td></td></td></td></td></td>	26 1/2 <td>Amer. Home Prod.<td>29 1/2<td>17 1/2<td>16 1/2<td>21 1/2<td>23 1/2</td></td></td></td></td></td>	Amer. Home Prod. <td>29 1/2<td>17 1/2<td>16 1/2<td>21 1/2<td>23 1/2</td></td></td></td></td>	29 1/2 <td>17 1/2<td>16 1/2<td>21 1/2<td>23 1/2</td></td></td></td>	17 1/2 <td>16 1/2<td>21 1/2<td>23 1/2</td></td></td>	16 1/2 <td>21 1/2<td>23 1/2</td></td>	21 1/2 <td>23 1/2</td>	23 1/2
23 1/2 <td>20 1/2<td>Amer. Medics<td>23 1/2<td>7 1/2<td>6 1/2<td>12 1/2<td>14 1/2</td></td></td></td></td></td></td>	20 1/2 <td>Amer. Medics<td>23 1/2<td>7 1/2<td>6 1/2<td>12 1/2<td>14 1/2</td></td></td></td></td></td>	Amer. Medics <td>23 1/2<td>7 1/2<td>6 1/2<td>12 1/2<td>14 1/2</td></td></td></td></td>	23 1/2 <td>7 1/2<td>6 1/2<td>12 1/2<td>14 1/2</td></td></td></td>	7 1/2 <td>6 1/2<td>12 1/2<td>14 1/2</td></td></td>	6 1/2 <td>12 1/2<td>14 1/2</td></td>	12 1/2 <td>14 1/2</td>	14 1/2
44 1/2 <td>37 1/2<td>Amer. Nat. Gas.<td>44 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td></td>	37 1/2 <td>Amer. Nat. Gas.<td>44 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td>	Amer. Nat. Gas. <td>44 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td>	44 1/2 <td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td>	30 1/2 <td>28 1/2<td>34 1/2<td>36 1/2</td></td></td>	28 1/2 <td>34 1/2<td>36 1/2</td></td>	34 1/2 <td>36 1/2</td>	36 1/2
37 1/2 <td>32 1/2<td>Amer. Stand.<td>37 1/2<td>26 1/2<td>24 1/2<td>30 1/2<td>32 1/2</td></td></td></td></td></td></td>	32 1/2 <td>Amer. Stand.<td>37 1/2<td>26 1/2<td>24 1/2<td>30 1/2<td>32 1/2</td></td></td></td></td></td>	Amer. Stand. <td>37 1/2<td>26 1/2<td>24 1/2<td>30 1/2<td>32 1/2</td></td></td></td></td>	37 1/2 <td>26 1/2<td>24 1/2<td>30 1/2<td>32 1/2</td></td></td></td>	26 1/2 <td>24 1/2<td>30 1/2<td>32 1/2</td></td></td>	24 1/2 <td>30 1/2<td>32 1/2</td></td>	30 1/2 <td>32 1/2</td>	32 1/2
68 1/2 <td>57 1/2<td>Amer. Tel. & E.<td>68 1/2<td>32 1/2<td>30 1/2<td>36 1/2<td>38 1/2</td></td></td></td></td></td></td>	57 1/2 <td>Amer. Tel. & E.<td>68 1/2<td>32 1/2<td>30 1/2<td>36 1/2<td>38 1/2</td></td></td></td></td></td>	Amer. Tel. & E. <td>68 1/2<td>32 1/2<td>30 1/2<td>36 1/2<td>38 1/2</td></td></td></td></td>	68 1/2 <td>32 1/2<td>30 1/2<td>36 1/2<td>38 1/2</td></td></td></td>	32 1/2 <td>30 1/2<td>36 1/2<td>38 1/2</td></td></td>	30 1/2 <td>36 1/2<td>38 1/2</td></td>	36 1/2 <td>38 1/2</td>	38 1/2
31 1/2 <td>27 1/2<td>Amer. Tel.<td>31 1/2<td>20 1/2<td>18 1/2<td>24 1/2<td>26 1/2</td></td></td></td></td></td></td>	27 1/2 <td>Amer. Tel.<td>31 1/2<td>20 1/2<td>18 1/2<td>24 1/2<td>26 1/2</td></td></td></td></td></td>	Amer. Tel. <td>31 1/2<td>20 1/2<td>18 1/2<td>24 1/2<td>26 1/2</td></td></td></td></td>	31 1/2 <td>20 1/2<td>18 1/2<td>24 1/2<td>26 1/2</td></td></td></td>	20 1/2 <td>18 1/2<td>24 1/2<td>26 1/2</td></td></td>	18 1/2 <td>24 1/2<td>26 1/2</td></td>	24 1/2 <td>26 1/2</td>	26 1/2
27 1/2 <td>24 1/2<td>AMT<td>27 1/2<td>20 1/2<td>18 1/2<td>24 1/2<td>26 1/2</td></td></td></td></td></td></td>	24 1/2 <td>AMT<td>27 1/2<td>20 1/2<td>18 1/2<td>24 1/2<td>26 1/2</td></td></td></td></td></td>	AMT <td>27 1/2<td>20 1/2<td>18 1/2<td>24 1/2<td>26 1/2</td></td></td></td></td>	27 1/2 <td>20 1/2<td>18 1/2<td>24 1/2<td>26 1/2</td></td></td></td>	20 1/2 <td>18 1/2<td>24 1/2<td>26 1/2</td></td></td>	18 1/2 <td>24 1/2<td>26 1/2</td></td>	24 1/2 <td>26 1/2</td>	26 1/2
13 1/2 <td>12 1/2<td>Amplex<td>13 1/2<td>5 1/2<td>4 1/2<td>8 1/2<td>10 1/2</td></td></td></td></td></td></td>	12 1/2 <td>Amplex<td>13 1/2<td>5 1/2<td>4 1/2<td>8 1/2<td>10 1/2</td></td></td></td></td></td>	Amplex <td>13 1/2<td>5 1/2<td>4 1/2<td>8 1/2<td>10 1/2</td></td></td></td></td>	13 1/2 <td>5 1/2<td>4 1/2<td>8 1/2<td>10 1/2</td></td></td></td>	5 1/2 <td>4 1/2<td>8 1/2<td>10 1/2</td></td></td>	4 1/2 <td>8 1/2<td>10 1/2</td></td>	8 1/2 <td>10 1/2</td>	10 1/2
20 1/2 <td>17 1/2<td>Amplex<td>20 1/2<td>12 1/2<td>11 1/2<td>16 1/2<td>18 1/2</td></td></td></td></td></td></td>	17 1/2 <td>Amplex<td>20 1/2<td>12 1/2<td>11 1/2<td>16 1/2<td>18 1/2</td></td></td></td></td></td>	Amplex <td>20 1/2<td>12 1/2<td>11 1/2<td>16 1/2<td>18 1/2</td></td></td></td></td>	20 1/2 <td>12 1/2<td>11 1/2<td>16 1/2<td>18 1/2</td></td></td></td>	12 1/2 <td>11 1/2<td>16 1/2<td>18 1/2</td></td></td>	11 1/2 <td>16 1/2<td>18 1/2</td></td>	16 1/2 <td>18 1/2</td>	18 1/2
28 1/2 <td>25 1/2<td>Amplex<td>28 1/2<td>20 1/2<td>18 1/2<td>24 1/2<td>26 1/2</td></td></td></td></td></td></td>	25 1/2 <td>Amplex<td>28 1/2<td>20 1/2<td>18 1/2<td>24 1/2<td>26 1/2</td></td></td></td></td></td>	Amplex <td>28 1/2<td>20 1/2<td>18 1/2<td>24 1/2<td>26 1/2</td></td></td></td></td>	28 1/2 <td>20 1/2<td>18 1/2<td>24 1/2<td>26 1/2</td></td></td></td>	20 1/2 <td>18 1/2<td>24 1/2<td>26 1/2</td></td></td>	18 1/2 <td>24 1/2<td>26 1/2</td></td>	24 1/2 <td>26 1/2</td>	26 1/2
11 1/2 <td>9 1/2<td>ANCO<td>11 1/2<td>21 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td></td></td>	9 1/2 <td>ANCO<td>11 1/2<td>21 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td></td>	ANCO <td>11 1/2<td>21 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td>	11 1/2 <td>21 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td>	21 1/2 <td>19 1/2<td>25 1/2<td>27 1/2</td></td></td>	19 1/2 <td>25 1/2<td>27 1/2</td></td>	25 1/2 <td>27 1/2</td>	27 1/2
30 1/2 <td>26 1/2<td>ANCO<td>30 1/2<td>21 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td></td></td>	26 1/2 <td>ANCO<td>30 1/2<td>21 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td></td>	ANCO <td>30 1/2<td>21 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td></td>	30 1/2 <td>21 1/2<td>19 1/2<td>25 1/2<td>27 1/2</td></td></td></td>	21 1/2 <td>19 1/2<td>25 1/2<td>27 1/2</td></td></td>	19 1/2 <td>25 1/2<td>27 1/2</td></td>	25 1/2 <td>27 1/2</td>	27 1/2
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10 1/2 <td>8 1/2<td>AVL<td>8 1/2<td>9 1/2<td>16 1/2<td>18 1/2<td>20 1/2</td></td></td></td></td></td></td>	8 1/2 <td>AVL<td>8 1/2<td>9 1/2<td>16 1/2<td>18 1/2<td>20 1/2</td></td></td></td></td></td>	AVL <td>8 1/2<td>9 1/2<td>16 1/2<td>18 1/2<td>20 1/2</td></td></td></td></td>	8 1/2 <td>9 1/2<td>16 1/2<td>18 1/2<td>20 1/2</td></td></td></td>	9 1/2 <td>16 1/2<td>18 1/2<td>20 1/2</td></td></td>	16 1/2 <td>18 1/2<td>20 1/2</td></td>	18 1/2 <td>20 1/2</td>	20 1/2
47 1/2 <td>44 1/2<td>Avco<td>47 1/2<td>38 1/2<td>36 1/2<td>44 1/2<td>46 1/2</td></td></td></td></td></td></td>	44 1/2 <td>Avco<td>47 1/2<td>38 1/2<td>36 1/2<td>44 1/2<td>46 1/2</td></td></td></td></td></td>	Avco <td>47 1/2<td>38 1/2<td>36 1/2<td>44 1/2<td>46 1/2</td></td></td></td></td>	47 1/2 <td>38 1/2<td>36 1/2<td>44 1/2<td>46 1/2</td></td></td></td>	38 1/2 <td>36 1/2<td>44 1/2<td>46 1/2</td></td></td>	36 1/2 <td>44 1/2<td>46 1/2</td></td>	44 1/2 <td>46 1/2</td>	46 1/2
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24 1/2 <td>22 1/2<td>Avco<td>24 1/2<td>19 1/2<td>17 1/2<td>23 1/2<td>25 1/2</td></td></td></td></td></td></td>	22 1/2 <td>Avco<td>24 1/2<td>19 1/2<td>17 1/2<td>23 1/2<td>25 1/2</td></td></td></td></td></td>	Avco <td>24 1/2<td>19 1/2<td>17 1/2<td>23 1/2<td>25 1/2</td></td></td></td></td>	24 1/2 <td>19 1/2<td>17 1/2<td>23 1/2<td>25 1/2</td></td></td></td>	19 1/2 <td>17 1/2<td>23 1/2<td>25 1/2</td></td></td>	17 1/2 <td>23 1/2<td>25 1/2</td></td>	23 1/2 <td>25 1/2</td>	25 1/2
40 1/2 <td>34 1/2<td>Avco<td>40 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td></td>	34 1/2 <td>Avco<td>40 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td>	Avco <td>40 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td>	40 1/2 <td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td>	30 1/2 <td>28 1/2<td>34 1/2<td>36 1/2</td></td></td>	28 1/2 <td>34 1/2<td>36 1/2</td></td>	34 1/2 <td>36 1/2</td>	36 1/2
36 1/2 <td>33 1/2<td>Avco<td>36 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td></td>	33 1/2 <td>Avco<td>36 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td>	Avco <td>36 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td>	36 1/2 <td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td>	30 1/2 <td>28 1/2<td>34 1/2<td>36 1/2</td></td></td>	28 1/2 <td>34 1/2<td>36 1/2</td></td>	34 1/2 <td>36 1/2</td>	36 1/2
34 1/2 <td>31 1/2<td>Avco<td>34 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td></td>	31 1/2 <td>Avco<td>34 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td>	Avco <td>34 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td>	34 1/2 <td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td>	30 1/2 <td>28 1/2<td>34 1/2<td>36 1/2</td></td></td>	28 1/2 <td>34 1/2<td>36 1/2</td></td>	34 1/2 <td>36 1/2</td>	36 1/2
29 1/2 <td>26 1/2<td>Avco<td>29 1/2<td>22 1/2<td>20 1/2<td>26 1/2<td>28 1/2</td></td></td></td></td></td></td>	26 1/2 <td>Avco<td>29 1/2<td>22 1/2<td>20 1/2<td>26 1/2<td>28 1/2</td></td></td></td></td></td>	Avco <td>29 1/2<td>22 1/2<td>20 1/2<td>26 1/2<td>28 1/2</td></td></td></td></td>	29 1/2 <td>22 1/2<td>20 1/2<td>26 1/2<td>28 1/2</td></td></td></td>	22 1/2 <td>20 1/2<td>26 1/2<td>28 1/2</td></td></td>	20 1/2 <td>26 1/2<td>28 1/2</td></td>	26 1/2 <td>28 1/2</td>	28 1/2
24 1/2 <td>22 1/2<td>Avco<td>24 1/2<td>19 1/2<td>17 1/2<td>23 1/2<td>25 1/2</td></td></td></td></td></td></td>	22 1/2 <td>Avco<td>24 1/2<td>19 1/2<td>17 1/2<td>23 1/2<td>25 1/2</td></td></td></td></td></td>	Avco <td>24 1/2<td>19 1/2<td>17 1/2<td>23 1/2<td>25 1/2</td></td></td></td></td>	24 1/2 <td>19 1/2<td>17 1/2<td>23 1/2<td>25 1/2</td></td></td></td>	19 1/2 <td>17 1/2<td>23 1/2<td>25 1/2</td></td></td>	17 1/2 <td>23 1/2<td>25 1/2</td></td>	23 1/2 <td>25 1/2</td>	25 1/2
40 1/2 <td>34 1/2<td>Avco<td>40 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td></td>	34 1/2 <td>Avco<td>40 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td>	Avco <td>40 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td>	40 1/2 <td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td>	30 1/2 <td>28 1/2<td>34 1/2<td>36 1/2</td></td></td>	28 1/2 <td>34 1/2<td>36 1/2</td></td>	34 1/2 <td>36 1/2</td>	36 1/2
36 1/2 <td>33 1/2<td>Avco<td>36 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td></td>	33 1/2 <td>Avco<td>36 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td>	Avco <td>36 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td>	36 1/2 <td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td>	30 1/2 <td>28 1/2<td>34 1/2<td>36 1/2</td></td></td>	28 1/2 <td>34 1/2<td>36 1/2</td></td>	34 1/2 <td>36 1/2</td>	36 1/2
34 1/2 <td>31 1/2<td>Avco<td>34 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td></td>	31 1/2 <td>Avco<td>34 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td>	Avco <td>34 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td>	34 1/2 <td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td>	30 1/2 <td>28 1/2<td>34 1/2<td>36 1/2</td></td></td>	28 1/2 <td>34 1/2<td>36 1/2</td></td>	34 1/2 <td>36 1/2</td>	36 1/2
29 1/2 <td>26 1/2<td>Avco<td>29 1/2<td>22 1/2<td>20 1/2<td>26 1/2<td>28 1/2</td></td></td></td></td></td></td>	26 1/2 <td>Avco<td>29 1/2<td>22 1/2<td>20 1/2<td>26 1/2<td>28 1/2</td></td></td></td></td></td>	Avco <td>29 1/2<td>22 1/2<td>20 1/2<td>26 1/2<td>28 1/2</td></td></td></td></td>	29 1/2 <td>22 1/2<td>20 1/2<td>26 1/2<td>28 1/2</td></td></td></td>	22 1/2 <td>20 1/2<td>26 1/2<td>28 1/2</td></td></td>	20 1/2 <td>26 1/2<td>28 1/2</td></td>	26 1/2 <td>28 1/2</td>	28 1/2
24 1/2 <td>22 1/2<td>Avco<td>24 1/2<td>19 1/2<td>17 1/2<td>23 1/2<td>25 1/2</td></td></td></td></td></td></td>	22 1/2 <td>Avco<td>24 1/2<td>19 1/2<td>17 1/2<td>23 1/2<td>25 1/2</td></td></td></td></td></td>	Avco <td>24 1/2<td>19 1/2<td>17 1/2<td>23 1/2<td>25 1/2</td></td></td></td></td>	24 1/2 <td>19 1/2<td>17 1/2<td>23 1/2<td>25 1/2</td></td></td></td>	19 1/2 <td>17 1/2<td>23 1/2<td>25 1/2</td></td></td>	17 1/2 <td>23 1/2<td>25 1/2</td></td>	23 1/2 <td>25 1/2</td>	25 1/2
40 1/2 <td>34 1/2<td>Avco<td>40 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td></td>	34 1/2 <td>Avco<td>40 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td></td>	Avco <td>40 1/2<td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td></td>	40 1/2 <td>30 1/2<td>28 1/2<td>34 1/2<td>36 1/2</td></td></td></td>	30 1/2 <td>28 1/2<td>34 1/2<td>36 1/2</td></td></td>	28 1/2 <td>34 1/2<td>36 1/2</td></td>	34 1/2 <td>36 1/2</td>	36 1/2
36 1/2 <td>33 1/2<td>Avco<td>36 1/2<td>30 1/2</td></td></td></td>	33 1/2 <td>Avco<td>36 1/2<td>30 1/2</td></td></td>	Avco <td>36 1/2<td>30 1/2</td></td>	36 1/2 <td>30 1/2</td>	30 1/2			

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FINANCIAL TIMES STOCK INDICES							
	Apr. 7	Apr. 8	Apr. 9	Apr. 6	Apr. 5	Mar. 31	A year or more
Government Secs.	75.96	74.55	74.06	73.94	73.36	76.09	69.61
Fixed Interest	77.43	77.58	77.84	77.53	77.19	77.38	70.23
Industrial Ordinary	467.1	471.4	470.2	467.2	462.8	465.8	408.0
Gold Mines	153.0	153.7	156.1	166.1	157.4	158.7	138.2
Int. Div. Yield	5.77	5.79	5.79	5.79	5.94	5.81	5.98
Savings Yield (fully p'd)	16.86	16.71	16.60	17.01	17.17	17.07	17.45
P/E Rat to Incl (%)	8.39	8.17	8.80	8.85	8.18	8.25	8.40
Issuings made	493.75	5,369	4,944	5,714	4,839	5,498	3,869
Issuings stopped		78.15	68.15	76.39	60.56	74.54	55.41
Equity turnover 2nd		160.994	162.88	226.623	131.129	191.213	15,339

10 am. 471.1 11 am. 471.8 Noon 470.2 1 pm 471.1
2 pm 471.8 3 pm 471.8 4 pm 471.8
Latest prices 15-30-35 1935.

* Based on 100 Gns. 1934-35. 1934-35. 1934-35. 1934-35. 1934-35. 1934-35. 1934-35. 1934-35.
Basis 100 Gns. 1934-35. 1934-35. 1934-35. 1934-35. 1934-35. 1934-35. 1934-35. 1934-35.
Since 12/9/35. SE Activity July-Dec. 1935.

HIGHS AND LOWS				S.E. ACTIVITY		
	1978		Since Completion		Apr. 7	Apr. 6
	High	Low	High	Low		
Govt. Secs.	75.95	73.94	157.4	94.15	Daily Gains: 189.9	177.9
	(50)	(44)	(9/15/35)	(10/7/35)	Speculative: 180.5	211.0
Fixed Int.	81.77	74.7	150.4	50.33	Speculative: 80.5	59.5
	(64)	(15.2)	(20/1/37)	(2/5/37)	Total: 113.1	135.8
Ind. Ord.	497.5	453.6	149.7	49.4	6-day A'vage G'n: 169.8	167.4
	(64)	(23)	(14/6/37)	(26/6/40)	Industrial: 278.3	283.8
Gold Mines	168.6	120.3	94.2	42.5	Speculative: 41.9	65.2
	(60)	(61)	(22-7/37)	(10/71)	Total: 118.5	151.0

FINANCIAL TIMES STOCK INDICES							
	April 7	Apr. 8	Apr. 9	April 6	April 5	Mar. 31	A Year ago
Industrial Ordinary	208.17	208.99	208.53	201.40	199.26	199.63	162.74
0 Shares	223.46	223.50	222.77	221.67	219.59	220.07	185.61
A. Div. Yield p.	5.53	5.50	5.51	5.54	5.59	5.55	5.81
N Ratio (incl)	7.98	7.97	7.96	7.87	7.80	7.93	9.26
1 Share	206.20	206.83	206.15	205.48	205.76	206.17	171.55

Financial Times Monday April 10 1978

INDUSTRIALS—Continued

[illegible]

INSURANCE—Continued

[illegible]**PROPERTY** Continued[illegible]

INV. TRUSTS—Continued									
Months	Stock	Price	Lot	Yld	Yld	Yld	Yld	Yld	Yld
Paid									
June	Chen's Inc. 21	62	1411	25	1.0	6.12	25	1.0	6.12
May	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Apr.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Mar.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Feb.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Jan.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Dec.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Nov.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Oct.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Sept.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Aug.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
July	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
June	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
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Aug.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
July	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
June	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
May	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Apr.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Mar.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Feb.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Jan.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Dec.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Nov.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Oct.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Sept.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Aug.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
July	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
June	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
May	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Apr.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Mar.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Feb.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Jan.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Dec.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Nov.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Oct.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Sept.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Aug.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
July	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
June	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
May	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Apr.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Mar.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Feb.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Jan.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Dec.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Nov.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Oct.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Sept.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Aug.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
July	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
June	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
May	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Apr.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Mar.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Feb.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Jan.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Dec.	Chen's Inc. 21	132	1411	25	1.0	6.12	25	1.0	6.12
Nov.	Chen's Inc								

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BANK
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MINES—Continued

CENTRAL AFRICAN						
Dividends Paid		Stock	Price	Last	Net	Ym Gm
Nov.	Mar.	Felton Ridge	185	24	650c	132.21
May		Rhoda's Corp. 100-sh	19	377	0.57	43.45
		Rosen Const. Co.	70	1274		4.8
Dec.	July	Central Ry. & P.	10	1011	0.1	14.6
Jan.	July	Don't Call R.R. 1	80	1212	0.87	14.4
Nov.		Wm. C. R. R. 1	29	117	0.07	14.73
		Zam. Cpr. S.B.O. 24	112	1174		

AUSTRALIAN						
Nov.	Apr.	Aceac	10	102		
		Bongville 50 Tons	147	143	Q8c	1.4
		Rh South Sea	74	474		
Oct.	May	Central Ry. & P.	58	696	Q10c	1.3
		G.M. Edwards & Co.	166	166		
September		Hampden Arms Sp	25	257	1.45	4.21
Dec.	Apr.	W. J. & Co.	53	133		2.3
		1414 Arms Sp	168	132	Q9c	1.73
		Mount Loyal 25c	22			
		Commercial Ry. & P.	132			
Jan.	Nov.	St. Hill's	101	3110	Q8c	1.9
		Sgt. Kalgut	102			
June	Nov.	W. J. & Co.	102			
		W. J. & Co.	102			
		Pacific Copper	35	7	Q11c	1.9
		Pancon't 12c	950			
		W. J. & Co.	102			
Apr.	Oct.	Port Phillip 50 Sp	457	197	Q15c	4.0
Oct.	May	Port Phillip 50 Sp	1075	34	Q6c	1.4
		Whim C. R. 25c				3.5

TINS

Nov.	Apr.	Amal. Nigeria	—	25	13.3	12.51	1.6	15.2
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COPPER

June	Dec.	Messina	80.50	86	12 12	±030c	1.9	±
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MISCELLANEOUS

Aug.	Feb.	Burma Mines 17½p.	9	57½	—	—	—
		Cons. March 10c	250	31	Q30c	2.6	7.2

Jan. June	Northgate Csl	297	375	—	—
	R.T.Z.	196	3110	18.5	q31 6.6
	Sabina Inds. Csl	31	—	—	—
	Tara Expts. Sl	850	—	—	—
Nov. July	Tekdy Minerals lhp	43	17.10	1.21	2.5 4.3
October	Yukon Cons. Csl	152	15.9	Q7c	φ 2.2

NOTES

Unless otherwise indicated, prices and net dividends are in pence and denominations are 25p. Estimated price/earnings ratios and covers are based on the latest reported earnings and accounts data, where prices are updated on half-yearly figures. P/E ratios are calculated on the basis of net distribution; bracketed figures indicate 10 per cent or more difference if calculated on "all" distribution. Covers are based on "maximum" distribution. Dividends are based on middle price, not gross, adjusted to 457 of 1944 per cent, and allow for value of deferred distributions and rights. Securities with denominations other than sterling are quoted inclusive of the investment dollar premium.

Highs and Lows marked thus have been adjusted to allow for rights issues for cash.

- Interim since increased or resumed.
- Interim since reduced, passed or deferred.
- Tax-free to non-residents on application.
- Figures or report awaited.
- Unlisted security.
- Price at time of suspension.
- Indicated dividend after pending scrip and/or rights issue: cover relates to previous dividend or forecast.
- Free of Stamp Duty.
- Merger bid or reorganization in progress.
- Not comparable.
- Same interim: reduced final and/or reduced earnings indicated.
- Forecast dividend: cover on earnings updated by latest interim statement.

Cover allows for conversion of shares not now ranking for dividends or ranking only for restricted dividend.
Cover does not allow for shares which may also rank for

dividend at a future date. No P/E ratio usually provided.
 Excluding a final dividend declaration.
 Regional price.
 No par value.
 Tax free. ^b Figures based on prospectus or other official estimate. ^c Cents. ^d Dividend rate paid or payable on part of capital; cover based on dividend on full capital.
^e Redemption yield. ^f Flat yield. ^g Assumed dividend and yield. ^h Assumed dividend and yield after scrip issue.

Payment from capital sources. k Kenya. m Interim higher than previous total. n Rights issue pending q Earnings based on preliminary figures. r Australian currency.

Dividend and yield exclude a special payment. **I** Indicated dividend: cover relates to previous dividend. **P/E** ratio based on latest annual earnings. **F** Forecast dividend: cover based on previous year's earnings. **V** Tax free up to 30p in the £. **Y** Yield allows for currency clause. **y** Dividend and yield based on merger terms. **z** Dividend and yield include a special payment: Cover does not apply to special payment. **A** Not dividend and yield. **B** Preference dividend passed or deferred **C** Canadian. **D** Cover and P/E ratio exclude profits

and yield based on prospectus or other official estimates for 1977-78. G Assumed dividend and yield after pending scrip

^a Auditor Rights Issue. ^b Dividend and Yield based on prospectus or other official estimates for 1976-77. ^c E Figures based on prospectus or other official estimates for 1978. ^d Dividend and yield based on prospectus or other official estimates for 1978. ^e N Dividend and Yield based on prospectus or other official estimates for 1978. ^f P Dividend and yield based on prospectus or other official estimates for 1977. ^g Gross. ^h Figures assumed. ⁱ U No significant Corporation tax payable. ^j Z Dividend total to date. ^k Y Yield based on Treasury Department Bill Rate shown unchanged until maturity.

Abbreviations: ex dividend; ex scrip issue; ex rights; ex

"Recent Issues" and "Rights" Page 29

100 to 200 per thousand for total acidity

Trial	Percentage of correct responses
1	85
2	85
3	85
4	85
5	85
6	85
7	85
8	85
9	85
10	85

REGIONAL MARKETS

The following is a selection of London quotations on shares previously listed only in regional markets. Prices of Irish issues, most of which are not officially listed in London, are as quoted on the Irish exchange.

Libby (Inv. 20p)	23	Sheff. Refrsmnt.	51
Spin. Spinning ..	45	Sindall (Wm.) ..	83
erium ..	26	+6			
ing wtr. Est. 50p	282	-1			
lower Crust ..	22			

Conr. 8% '80/82	£95½
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... ..	57	...	Annahan Gas	75
... ..	57	...	Arnott	290
... ..	154	...	Carroll (P.J.)	92
... ..	47	...	Clondalkin	91st
... ..	2nd	...	Concrete Prods.	128
... ..	180	+10	Heston (Hdga.)	43
... ..	80	...	Ins. Corp.	200
... ..	147	...	Irish Ropes	132
... ..	255	...	Jacob	65

John Goldsmith	129	Sunbeam	290
Marce (C. H.)	129	T.M.C.	190
Steel Mills	18 $\frac{1}{2}$	Unidare	82

OPTIONS
2-month Call Rates

3-Month Call Rates

Materials		L.C.I.	23	Tube Invest.	38
Brew	6½	"Imps"	7	Unifer	40
P. Cement	18	L.C.I.	28	Utd. Drapery	7½
S.R.	9	Inveresk	7	Vickers	15
Abbeck	10	KCA	5	Woolworths	6
Barclays Bank	25	Ladbroke	27		
Becham	38	Legal & Gen.	14	Property	
Bootham	15	Lex Service	7		
South Drug	14	Liquid Bank	22	Brit. Land	34

Cap. Counties.	5
E.P.	5
Intreuropean	4

Wyn (J.)	20	Lomb	7	Land Secs.	18
Arton 'A'	13	Lucas Inds.	25	MEPC	122
Adbury	5	Lyons (J.)	13	Peathey	10
Wartgolds	10	"Mams"	7	Samuel Propo.	10
Benham	10	Mrs. & Spncr	11	Town & City	2
Stillers	13	Midland Bank	25		
Unipol	82	N.E.I.	20	Oils	
Single Star	11	Nat. Wes. Bank	22	Brit. Petroleum	35
M.I.	18	Do. Warranis	10		

En. Accident	17	P & O Dfd.	10	Burmah Oil.....	7
En. Electric..	18	Plessey	9	Charterhall....	3½
En. Gas	40	R. N. M.	5	Shell	28

Lead Met.	9	Rank Org. 'A'.	18	Ultramar.	22
U.S. 'A'	18	Reed Ind.	14	Mines	
Guardian	18	Spillers	4	Charter Cons.	22
K.N.	22	Tesco	4	Cons. Gold	29
Walker Sidd.	20	Thorn	22	Rio T. Zinc	16
House of Fraser.	12	Trust Houses.	15		

